NOVEMBER
1983

australian Micro computer magazine

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For people involved in the Australian microcomputing community

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Personal Computing goes portable

New micros flood 10ACC

Benchmarks: 23 systems using dBASE

Briefcase computers: Olivetti M10 Tandy M100 NEC 8201

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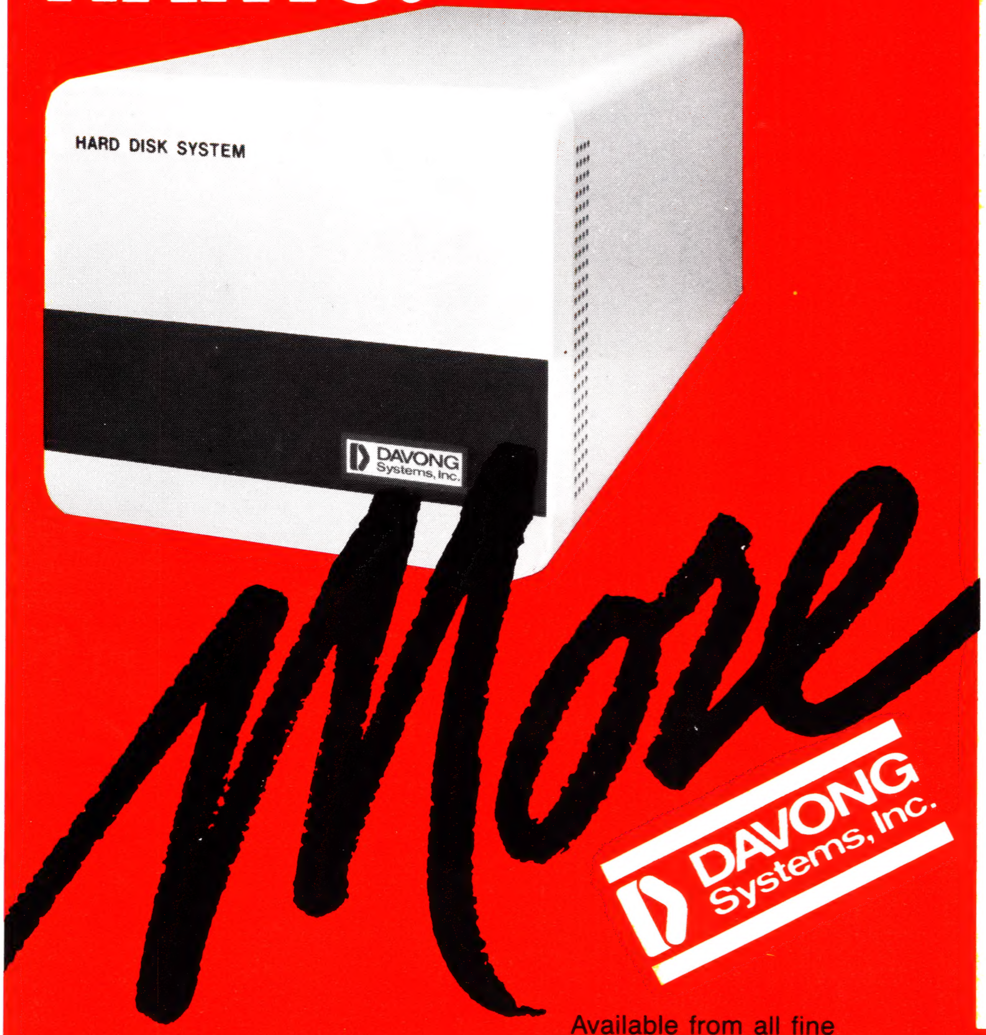

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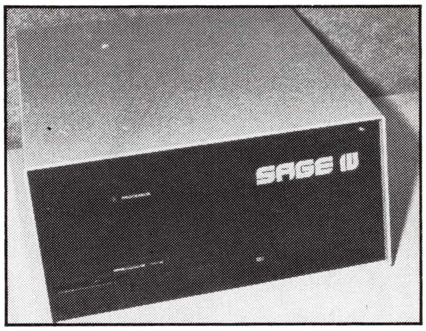

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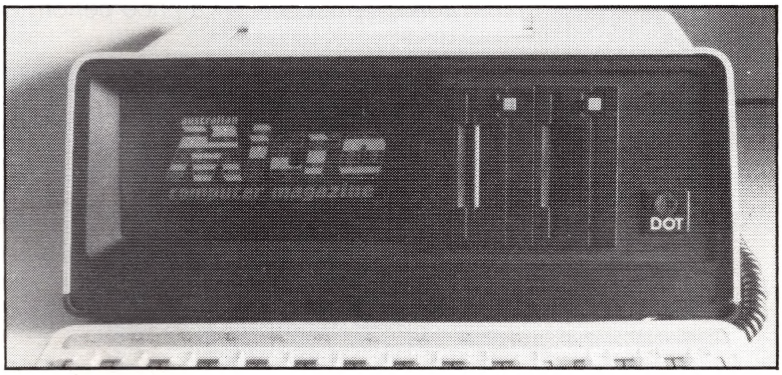

Computers to the people

FOR most of their history, computers were large, expensive systems, accessible only to corporations and bureaucracies. This first step in personalising computers was the provision of machines which could be owned by and used by individuals.

That step started with the microprocessor chip, exploded with the Apple II and reached respectable maturity with the arrival of the IBM PC. At the end of 1981, a computer could be a collection of inexpensive components assembled and usable on an individual's desk.

Then came the second phase of personalising computers. Osborne packaged the key components, printer excepted, in a single package which could be lugged anywhere and used wherever AC power could be obtained. And Commodore launched the VIC-20, intended only to be used in the home and able to introduce the basics of computing to the masses.

In under two years, 15 Osborne followers, 10 much smaller battery-operated hand-held portables, and 15 home market, self-education systems have crowded onto the Australian market. Osborne has filed for protection from its creditors and Commodore, having sold millions of VICs, has effectively superceded it with the Commodore 64.

At the start of 1983, Apple announced Lisa, putting the friendly Smalltalk human interface tantalisingly just out of reach of the masses. By year's end, Gavilan will be delivering in Australia a similar interface on a hand-held portable.

As these diverse components of the second phase of bringing computers to the people really take off, we see the real liberation of computing from its early shackles. Portable computing provides liberation from the tyrannies of distance and anchorage.

Affordable home computing provides liberation from the established channels of learning so anyone whose curiosity is aroused by computers can get an initial feel for themselves, while being entertained. User friendly interfaces promise to make the real power of computing even more accessible to most people.

Australia is fortunate to have three important locally designed and manufactured products well positioned in these markets.

Microbee, with around 15,000 sold into the home and educational market, has built up an enthusiastic bunch of users.

Magnum is in many ways ahead of the most advanced hand-held portables in the world, particularly on a price performance basis.

Amust has repackaged the original Osborne configuration much more attractively in a briefcase. ☐

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Information Systems makes it Fortune

THE Fortune microcomputer has an Australian distributor, Information Systems Service. After being available for the past year from several Computerland stores the new Fortune Extended Performance System had its world release at 10ACC, it was not announced in the US until the following week. The Fortune 32:16 Motorola 68000-based machine comes in two models — Professional Work systems were the first word processing-office automation functions with data processing. The PWS supports from one to three terminals and the EPS up to 10. A spokesman said he believed these systems were the first to integrate word processing/office automation functions with data processing. In basic form, the PWS is priced at about $A13,000. This configuration would comprise 512K-bytes of main memory, 800K-bytes floppy disk drive, 10M-bytes of fixed disk, screen and keyboard. A typical EPS with two screens, .75M-bytes of main memory, 800K-drive would cost about $A23,000. Marketing strategy would be for Information Systems Service, a trading name, to market to large end users, taking advantage of the extensive communications facilities. Dealers would be appointed to cover the rest of the market.

Apple starts staff movement

THE movement of personnel within the computer industry always has been regarded as an important indicator of activity and direction. When Apple Australia sourced most of its senior staff from minicomputer companies, many observers saw this as indicating the approach the Australian subsidiary would develop. Three recent moves have seen Paul Dixon, shift from Australian manufacturer System One to establish Imagineering's New Zealand operation and Peter Sandys, a founding member of one of Sydney's longest established retailers, City Personal Computers shift to Wiser-Microsoft as marketing manager to coordinate Microsoft's campaign to establish itself as a major force in the Australian market. Don McEwan's move from ACI to B&S Microcomp has sparked considerable comment in Melbourne dealer circles, as he was regarded as an important part of ACI's emergence as a force in the IBM-PC market and should consolidate Microcomp's reputation as Melbourne's leading microcomputer dealer for corporate accounts.

New generation cuts loose

COMMODORE finally has cut loose with a new generation of business systems on show at 10ACC. The product range has been completely repackaged in Borsche-designed cases with built-in tilt and swivel monitors. The repackaged CBM 8000 series has been given a new lease of life as the SK series with the addition of many features to improve the competitive position of the machine. These include a greatly improved keyboard, serial port and an enhanced operating environment, Basic 4 plus which supports advanced memory management and improved error handling features. A Commodore spokesman, Garry Mason, said the repackaging had been enthusiastically received by dealers who were also waiting eagerly for the release of the 700 series that was displayed at 10ACC. The 700 series was the inspiration for the new case design and features a 6502 processor with 128K RAM memory, IEEE and serial ports and the Commodore environment. The machine can be extended to 256K RAM, an 8088 processor supporting MS-DOS and color graphics high-resolution graphics is expected later next year. The entry level price for the range will be $A2160 for the base unit. Commodore also showed several new peripheral units including a half height version of its 5M-bytes a drive disk unit. These drives are expected to be offered integrated into the 700 series unit next year. Commodore also showed the first color portable micro in Australia with its Commodore 64-based, SX-64. This repackaging of the Commodore 64 as a 10kg portable with a 5in color screen will retail for under $A2000. The unit is attractively styled, featuring two disk drives and compatibility of the complete kind with the Commodore 64.

John Sands toys with electronics

JOHN SANDS, one of Australia's largest manufacturers and distributors of toys has established a consumer electronics division. A spokesman for the company said sales of board games had fallen 30 per cent in the past year and most of this was attributed to the impact of video games and home computers. The first product released by John Sands will be the Sega SC3000 home computer manufactured by Sega, a leading Japanese arcade game machine designer that worked closely with Coleco in the design of the Colecovision game system.

The SC3000 follows the emerging MSX standard with Z80 processor, 32K

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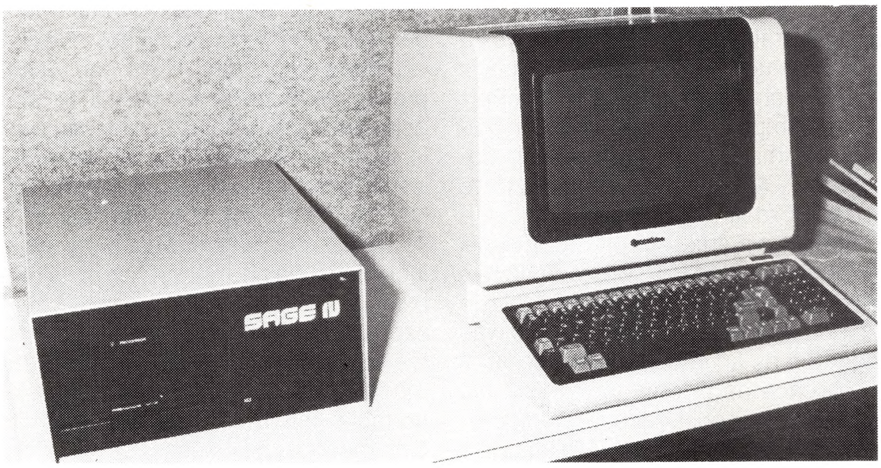
Rakon to sell Sage micros



AN ELECTRICAL component manufacturer, Rakon, has acquired the Australasian distribution rights for the highly regarded Sage microcomputer. The Sage is a 68000-based multiuser computer that has been closely associated with the UCSD P-system environment. The computer has 128K RAM standard and is expandable to 1M-byte. Disk storage is provided by two 640K 5in floppies with optional hard disk storage to 240M-bytes. The system is packaged in a small box measuring 4in x 12in x 20in including floppy disk drives. A wide range of terminals can be used with the system. Rakon preferring the Televideo 925. Spokesman for Rakon, Tim Knell, claimed the system had an excellent technical reputation. This was what had attracted Rakon to the system, he said. Rakon began selling the system in New Zealand last year and received considerable interest initially from tertiary institutions and software developers. Now that the system is available in Australia and the BOS Cobol operating environment BOS has been added to the machine as well as the recently released CPM 68K and C compiler from Digital Research. Rakon hopes that this will encourage developers to use the machine in vertical market applications. At present the machine is a powerful, versatile system supporting multiple users with a memory partition system that allows different users to run either CP/M of the UCSD P-system. Rakon also offers Volition Systems Modula software, SPI accounting modules, word processing and spreadsheet software. Rakon intends to offer Whitesmith's Idris operating environment system to provide users with access to a Unix environment early next year. At an entry level price of $A4650 for a 256K, single-drive system, he expects the Sage to do very well on the Australian market.

RAM, 32K ROM, high-resolution color graphics, sprites and good-quality sound. The machine will be available through all major department stores and toy shops at a retail price of $A329 and will be supported with a campaign of 400 30-second commercials on prime-time television over the summer period. The spokesman said John Sands expected to sell 10,000 computers before Christmas and acknowledged that extensive discounting in the consumer market would drive the price down to about $A300.

'Significant' role for Wiser-Microsoft.

WISER-MICROSOFT is about to claim a significant place in the local software market following its takeover by Microsoft. At 10ACC, Charles Smith, intercontinental manager for Microsoft, talked about recent activity in the US, claiming that 10,000 copies of Multitool Word had been ordered since its release on September 1, and that an MS-DOS generic version of the word processing package would be released with a parasitic mouse in January.

Microsoft's entry into Europe had been supported by the development of German, French, UK-English, Spanish and Dutch versions of the Multi-tool packages and the range would be rounded out with communications and data management products next year, he said. Smith wouldn't comment on suggestions that Microsoft would counter Visicorp's release of Vision with a similar product integrating the Multi-tool line. He wouldn't discuss Version 3 of MS-DOS, reported to include networking as a counter to Digital Research's Concurrent CP/M-86, except to say that product development was continuing, that Microsoft took it as a complement that DR was releasing its programming languages under MS-DOS, and that Microsoft should release its Common Graphics Interface at Comdex in November as a parallel standard to DR's GSX graphics package.

Xenix sales were satisfactory, he said, and although Microsoft didn't intend offering an off-the-shelf Xenix implementation, several of its OEM's would, early next year.

Insystems' new Stearns desktop

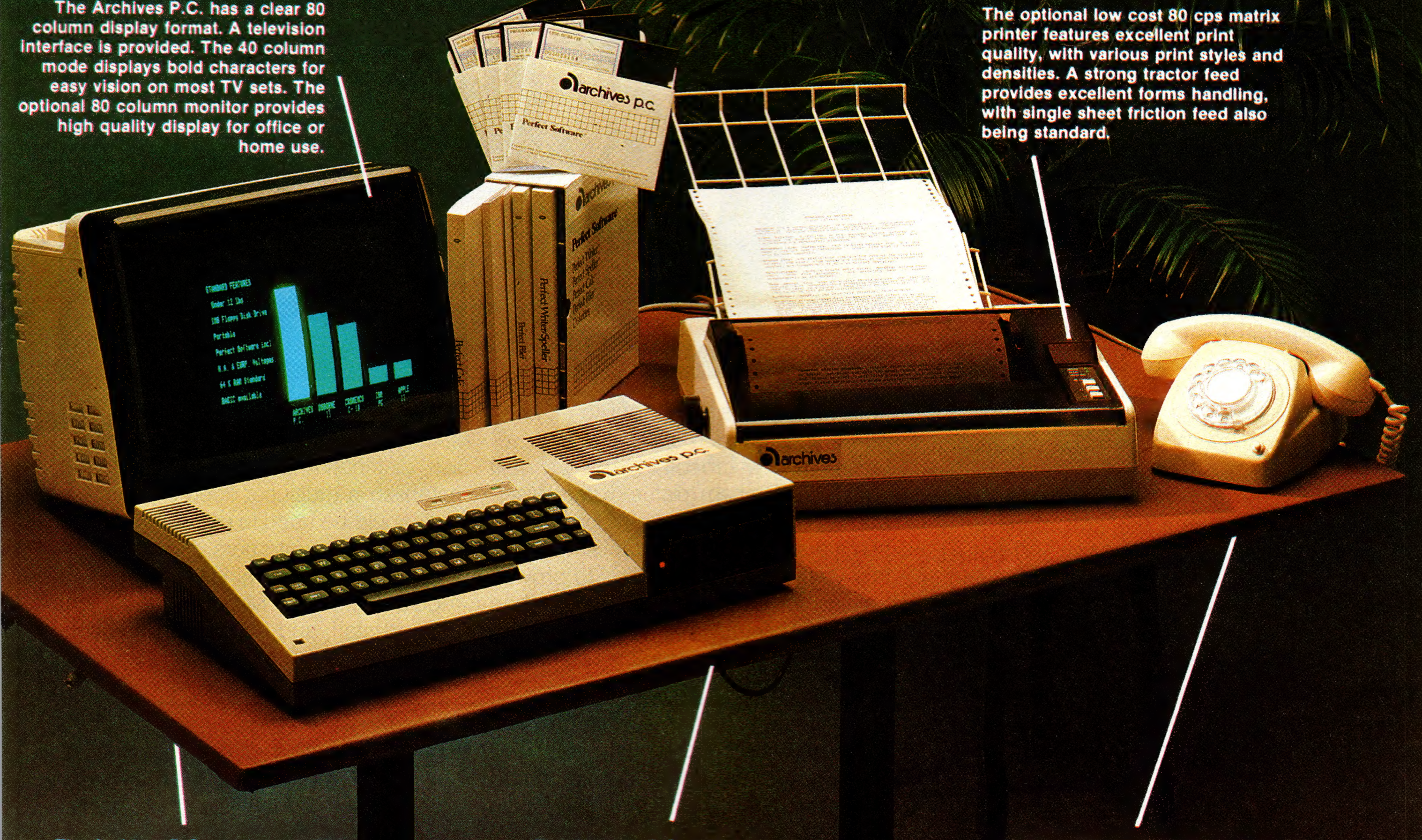
YET another computer, the Stearns desktop featuring partial IBM PC compatibility, turned up at the 10ACC stand of Insystems Pty Ltd. The unit's manufacturer Stearns Computer Systems, of Minneapolis, has provided its own emulation of PC-DOS to run on the 8086, four of its own unique expansion slots as well as one IBM-compatible slot, and "micronetwork" direct connection of up to five workstations. The use of Stearns' ICS (intelligent communications system) enables networking to be expanded up to 32 workstations. The inclusion of the 8Mhz 8086 processor and one or two Winchester disks to 20M-byte each puts Stearns clearly upmarket from the IBM PC, and reasonably comparable to the well-established Sirius I, although apparently at a lower price.

From its basic Cromemco range, Insystems has spread its wings rapidly to take on Cromemco's C10, Zorba, QDP and now Stearns, all of which appear to be technically substantial products in need of market recognition. While all apparently are selling at a level comparable to their supply, it is anticipated that when Insystems managing director Dr Simon Rosenbaum serves out his notice at his medical clinic, he will inject enough drive into the company for at least some of its range to become important features of the local market. Stearns' networking and its early provision of Concurrent CP/M and the intended standard GSX graphics are strengths on which it could base significant market penetration.

Dollar for Dollar, Byte for Byte, at $1995* the Archives P.C. is without doubt the best Microcomputer value for money in Australasia

The Archives P.C. has a clear 80 column display format. A television interface is provided. The 40 column mode displays bold characters for easy vision on most TV sets. The optional 80 column monitor provides high quality display for office or home use.

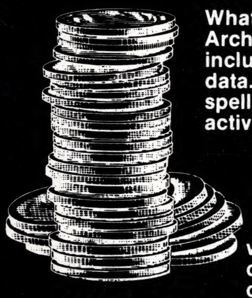
The optional low cost 80 cps matrix printer features excellent print quality, with various print styles and densities. A strong tractor feed provides excellent forms handling, with single sheet friction feed also being standard.



The Archives P.C. weighs only 12 lbs. It can easily be carried anywhere with you. A keyboard cover and carry handle are provided for convenient transportation.

The Archives P.C. provides an incredible one million characters (800 K Bytes formatted) of storage on its removable diskette drive. This is enough to handle large volumes of records, and perform a comprehensive range of tasks within most small business. A port is provided for a low cost second disk drive which doubles your available storage.

Communication via phone lines, or directly with other computers can be achieved with the optional communications board. This can also be purchased to provide communication with additional system peripherals.



What you see is not all you get with the Archives P.C. package. Each system also includes over 100 files of programs and data. Perfect Writer word processor with a spelling dictionary, are provided with Interactive diskette tutorials to teach you from a beginners level. the Perfect Filer will teach you how to design forms to computerize your index cards and other files. For example: customers, stock items, address lists or whatever, with the Perfect Calc spread sheet you can perform budgets, forecasts, costings, or many other "what if" type analysis you desire. The "P.C." also provides you CP/M, the most famous microcomputer software standard. This gives you access to thousands of available professional transfer, disk copies, printer control, etc., are standard features.

The "P.C." is distributed by one of Australia's leading microcomputer distributors. A growing network of representatives are providing nationwide support for the Archives P.C. systems. Utilising latest robotic testing technology on the Archives P.C.'s production line, maximum system reliability is achieved.

Why pay over twice the price for an equivalent capacity IBM or Apple computer system when you can purchase an Archives P.C. including $2000 worth of software for *$1995?

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Apple prunes price of Lisa

APPLE Computer Australia has cut the price of the Lisa personal computer system by about $A2000 and has unbundled applications software packages from the hardware. A similar price cut and unbundling strategy were announced by Apple Computer Inc in the US last week. The Lisa hardware, which is a 1M-byte, 32-bit 68000 system with a 5M-byte Winchester disk drive, two 860K-byte floppy disk drives, a high-resolution monitor, keyboard and mouse, will cost $A8595. The Lisa personal office system with the six productivity packages will cost $A9990. The applications can be bought separately. Lisaware, Lisacalc and Lisagraph each cost $A375, Lisaproject and Lisadraw $A495, and Lisalist $A260. Apple has a special price of $A10,395 for the six applications, a dot matrix printer and a parallel card on the Lisa system. A similar system without the dot matrix printer had previously cost $A12,300. Industry analysts believe the move is aimed at making the Lisa more attractive to large corporate users, although Joe Levy, vice president of marketing at International Data Corp, said Apple cut Lisa's price because the units were not selling at the original prices.

Microsoft presses for book division

MICROSOFT is to establish a book publishing division with the first releases from Microsoft Press early next year. Linda Graham (pictured), from Wiser-Microsoft, said a program of product seminars would be established later this year in all capital cities to provide training for dealers. Peter Sandys had been appointed marketing manager and PR agency Burson Marstellar would handle Microsoft's publicity, she said. Wiser-Miscrosoft also will establish distribution in New Zealand and establish a multiuser licensing system that would be used to encourage sales to corporate customers. Graham also said she was hoping to establish regular visits by Microsoft technical support staff, and hoped Mr Microsoft, Bill Gates, will visit next year.

Hoess flogging more concepts

WITH micro computers taking over the show at the 10ACC exhibition, there was considerable interest in what the father figure of the Australian micro industry, Rudi Hoess, would be emphasising, now freed from the load of distributing Apples. He has claimed frequently to be moving his company, Electronic Concepts Pty Ltd, up-market into the supply of total solutions, but at 10ACC Hoess was back hard at what he does best — flogging the microcomputing cause and the best current efforts in the world to make it truly personal. He introduced the first visions of the commercial reality of user-friendly computer driven tools with Apple's Lisa as his grand finale to a successful era with Apple. While still keen to sell Lisas and other Apples in the right places, Hoess now is toting a couple of Lisa followers which have managed to add their own Concepts on, too.

Corvus's Concept personal computer is more advanced than Lisa at a hardware level and 10ACC saw the Australian launch of an integrated set of application tools for Concept to add to its strong networking and developing environment.

Alongside the substantial Corvus offering was the Australian premier of the tiny Gavilan portable computer which packs a Lisa-like interface on to the 8 x 80 LCD screen of a true briefcase portable. Gavilan was established on the premise that potential buyers of portable computers needed a unit which was both powerful and fully self-contained, being easy for the non-computerist to use out of reach of support.

NZ order gives Executive boost

A MONTH after the release of its Executive 816 briefcase computer, Amust Computer Corp (Aust) Pty Ltd has received an order worth $A250,000 for 50 units and auxiliary equipment. Computer Warehouses Ltd, sole New Zealand distributor for the briefcase computer, announced the order at the launch of the micro in NZ. The Executive 816 with 64K-bytes of memory and 1.6M-byte floppy disk capacity, costs $NZ6000. Dennis Gallagher, marketing director of Amust, said the 816 had received a better reception in NZ than it had in Australia. It is believed Computer Warehouses will have orders worth $A800,000 for 300 more briefcase microcomputers before the end of the year. Gallagher predicts the NZ market will be worth $A3 million next year. The auxiliary equipment in the packaged deal includes monitors, disk drives and printers.

Australia has its first Vision

VISICORP'S Vision system had its first showing outside of the US at 10ACC on Imagineering's stand. Running on an IBM-PC XT with half a megabyte of memory and an 8087 chip, Vision provides the Visihost operating environment and three integrated applications, Visioncalc, Visionplot and Visionword. These packages offer similar capabilities to the Visico Visicorp's Visiseries, especially Visicalc and Visiword. Bruce Cossill, Imagineering's technical director, said he was impressed by Vision, and after waiting several months to use a live system said it had met all expectations. Vision is expected to be available for delivery in January with the Vision environment priced around $A1200, including a mouse and Vision applications-packages priced around $A300 each.

After adding enough memory to use the system, which supports virtual operation, using the hard disk as virtual storage, an IBM PC/Vision system is priced very close to Apple's Lisa.

Two micros to clash head-on

TWO microcomputers, on show at 10ACC for the first time, will compete head-on in the briefcase portable market. Dulmont released its sensational $A2495 Magnum and announced that the first two months' production had already been sold. The Magnum uses the 80186 processor, 250K CMOS memory, integrated ROM-based software, including MS-DOS 2.0 and the first useful personal information management package all in a 2 x 11 x 12.8lb package. The machine features a number of technical innovations related to power supply design, including the shutdown of the 8018 processor if it is idle for more than 20 microseconds.

Sharp apears to have been rushed into releasing the PC 5000 on to the Australian market. The 8088-based briefcase portable was shown at NCC in May, and local spokesmen for Sharp said at the time that the product would not be released in Australia this year. Sharp now intends to release the machine next month with a retail price near $A2500. The Sharp machine uses an 8088 processor with 128K RAM expandable to 256K, 192K ROM and a removable 128K bubble memory cartridge. The LCD display provides 8 lines of 80 characters with a bit-map of 640 x 80. The ROM-based software includes MS-DOS, spreadsheet and word processing software.

A 30 char/sec thermal printer that slots into the back of the machine is available as an option for around $A700.

Computhink about the Pied Piper

TWO new micro systems and a possible were noted at 10ACC. AWA, which has been pushing hard with the Corona micro system running an implementation of the Pick operating system soon should release the portable version of this IBM-compatible micro. Archives has released a Canadian-designed, Hong Kong-manufactured portable, known as the Pied Piper overseas and the Archives portable in Australia. The Z80A-based, CP/M portable features a built-in 700K disk drive and will retail for $A19,995 before tax including a bundle of the Perfect applications software. Melbourne company Computhink has released an IBM-compatible system manufactured by leading IBM-PC peripheral card manufacturer Sigma Design. Sigma Design has designed the system around its range of peripheral cards, building a bus-based rather than a motherboard system. Computhink intends distributing the system nationally.

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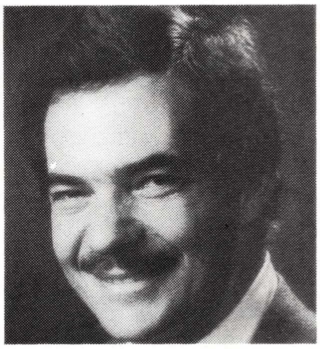
Osborne files for bankruptcy

HAYWARD, California — Hotly pursued by creditors, facing rejection from suitable merger prospects, and overwhelmed by an increasingly complex portable personal computer market, Osborne Computer has sought refuge by filing for protection under Chapter 11 Bankruptcy Statute in the US Bankruptcy Court in Oakland, California.

However, three of Osborne's creditors — Security Pacific Bank, Chemical Bank and National Bank of North America — are expected to reach an agreement with Osborne to provide emergency funds.

The banks will provide $US500,000 to $US600,000 to help the company "keep afloat", according to remarks attributed to Osborne's lawyer James Lopes. Those funds will allow Osborne to meet its last payroll, continue sales and service of existing products and support development of new products, such as the Executive II.



Adam Osborne

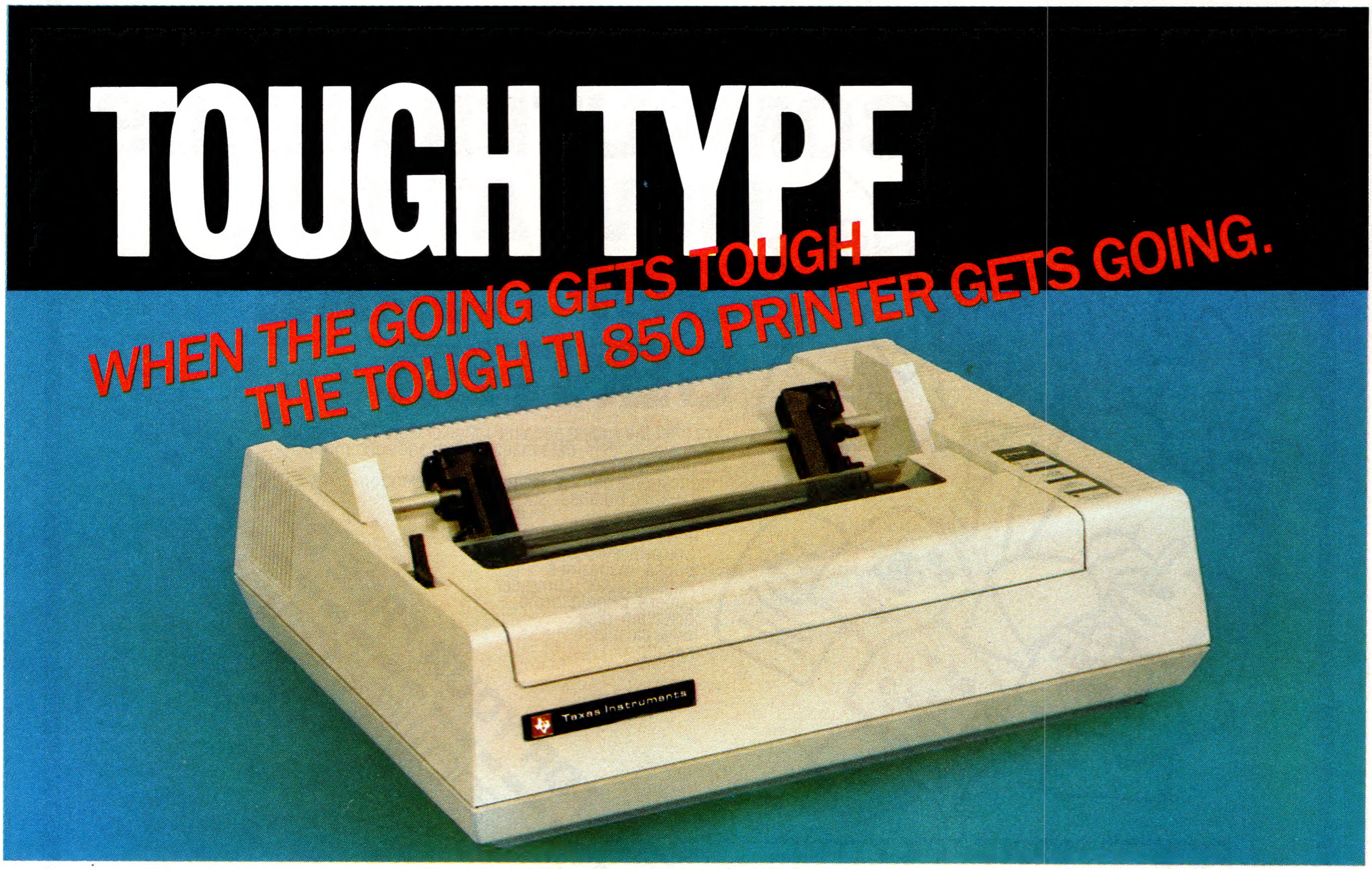
Osborne's bankruptcy petition reportedly says the company has assets of $US40 million, but owes creditors $US45 million. The company's founder, Adam Osborne, has resigned the presidency of the company, but has remained as chairman of the board.

Two San Jose, California, component suppliers, Testology Inc and PH Compents Inc, also have filed suits alleging that Osborne owes them more than $US4.5 million. Softech Inc, a Waltham, Massachusetts, supplier of custom software, announced that its earings would be adversely affected by Osborne's bankruptcy.

Osborne owes $US1.4 million from a $US1.9 million licensing agreement that allows the portable computer maker to use Softech's P-system microcomputing operating system on its products. While it had been reported in recent weeks that Osborne was beset by financial problems, the severity of its problems was not known until Osborne laid off all but 80 staffers.

Despite its filing of a Chapter 11 protection, the company reportedly is still scramling to find a buyer.

The Australian subsidiary company is reported to be selling all stock and the company left as a shell, which will be reactivated if a buyer is found for the US parent company. ☐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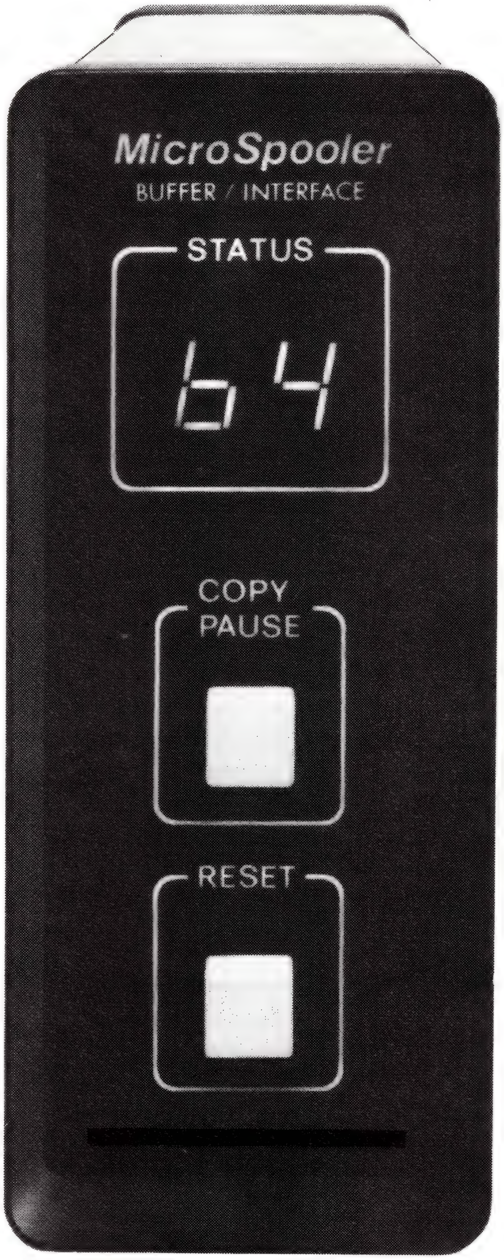

Features include:

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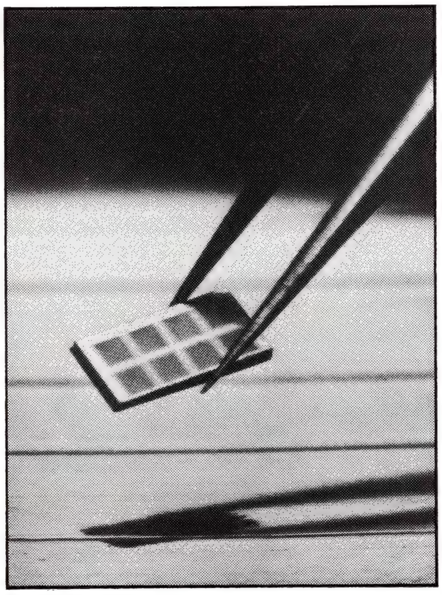
Motorola still tops in semiconductors

WHILE some semiconductor manufacturers fared poorly in the last 12 months, the integrated circuit industry also came up with some winners and a few surprises, attendees at the recent Status '83 mid-term seminar were informed.



Motorola Inc retained its position as the top merchant semiconductor supplier (Texas Instruments Inc is not in integrated circuit production worldwide), while both NEC Corp of Japan, and Advanced Micro Devices Inc (AMD) made major strides.

"Motorola will strengthen its lead in 1983 as the largest open-market semiconductor manufacturer in the world. NEC, with 20 per cent growth forecast for 1983, has acquired second place, with TI relegated to third place," said William Strauss, vice-president of Integrated Circuit Engineering Corp (ICE).

Motorola and Intel Corp were the only US manufacturers involved in bubble-memory devices, Strauss said and the company's recently announced agreement with Sagem, of France, for the production and marketing of Motorola 256K-byte and 1M-bit bubble memories would strengthen its position in an emerging market.

"Another anticipated product that should create interest is Motorola's 32-bit microprocessor, which will be offered only in CMOS technology. Sampling is scheduled for late this year, preceding a similar Intel product by at least one year and potentially providing an excellent market position for Motorola," Strauss said.

The rise of NEC to second place, he said, emphasised the increasing penetration into the market of non-US companies.

The Japanese dominated the increasingly important memory market, he said.

One quarter of all integrated circuits in the world used memory-based, with Hitachi rivalling NEC as the premier manufacturer of memories, Strauss said.

Sharp PC

SHARP Corp has unveiled a 16-bit personal computer featuring multi-windows, a mouse interface, and a bit-mapped graphic display.

MZ-5500 is based on the Intel Corp 8086 microcomprocessor, has 128K-bytes of RAM, Digital Research Inc CP/M-86 and Microsoft Inc MS-DOS operating system software, Japanese word processing, and color display capabilities.

Up to 32 users

INTEL CORP has unveiled two systems, the 2868/310 and 286/380 super microcomputers, both based on the Intel Corp IAPX 286 micro processor.

The microcomputers reportedly can handle up to 32 users, and according to benchmark tests, have a processing power between Digital Equipment Corp PDP 11 and the VAX 11/780 operating system.

Phone-y games

AT&T has announced a joint venture with Coleco to develop a video game service allowing subscribers to play arcade-type video games at home. Subscribers will pay a monthly fee that is likely to be included in their phone bill.

Doubts linger

COLECO has been trying to dispel doubts about its ability to deliver its much publicised $US600 Adam home computer. A private showing of the system this month to the press failed to dispel speculation that Coleco will not be able to deliver the product in volume. Coleco is claiming it will spend $US20 million to $US25 million on pre-Christmas advertising in an attempt to sell 500,000 systems.

Japanese opticals

KOKUSAI Denshin Denwa (International Telegraph and Telephone) Co Ltd and Sony Corp have announced the joint development of erasable optical disk memory equipment in the laboratory environment.

The product line was expected to debut commercially over the next two years, a spokesman said.

The technology is based on the vertical recording method and optical disk media.

Memory capacity is 40,000 pages of letter-size documents on a 30cm diameter optical disk, which is 500 to 1000 times greater than that of floppy disk drives.

Touch this screen

HEWLETT-Packard has introduced a business microcomputer that uses a touch-activated display screen for its main user interface. Like the IBM Personal Computer with which it will compete, the 150 supports Microsoft's MS-DOS operating system and is built around a 16-bit Intel 8088 microprocessor. Capable of running all HP 3000 series software without modification, the 150's CPU, display terminal and optional built-in printer sit on a dual 3½in floppy diskette unit that stores 270K-bytes on each drive. A minimum system costs $US3995 and an integrated 80-column printer is an extra $US500. A spokesman for HP Australia Ltd said the Model 150 would be released in January.

In his inimical style, Tony Smith rethinks 10ACC, and comments candidly about stand designs, the hardware displayed and personalities behind it all. From his point of view it could have been.

A desert covered in pyramids

THE annual showpiece of the Australian Computer Society, that large computer-oriented assembly of would be computer professionals, 10ACC, comprises both a conference and an exhibition. The 10ACC exhibition featured exhibition-stand architecture firstly, and microcomputers secondly.

One could have been forgiven for thinking the exhibition was a desert with pyramids from horizon to horizon and British colonists (ICL) camped under a tent. Commodore at least paid some attention to the venue by building its pyramid upside down.

While visiting Sydneysiders might have been nostalgic for the ordered cubism imposed by Centrepoint's low ceilings, there was still some boxing in the red corner where NEC, Toshiba and Barsons crowded together. There could not have been a better time for the nearby President group to start concentrating on product (more later) than color.

Tandy had a complete computer shop, including working classroom en route to replacing the one recently burnt out in Perth, while Myer's stand looked as though it might soon be lining the walls at Chadstone.

Email Computer Systems brought its spacecraft, not at all surprising the Unison watchers who have seen it arrive from nowhere and apparently gobble up L & L Australia in almost no time, just before the exhibition.

The Japanese challenger chose an appropriately much slower means of getting National Panasonic here on a would-be 12m yacht cut into three pieces.

Pyramids apart, the dominant stand architecture could well be described as abstract, a leading example being DEC's angled walls which effectively blocked vision and entry. In contrast, NCR made effective use of the space and height with a true two-storey stand, featuring, appropriately, its Tower 68000-based multi-user system.

The recent moves downmarket by NCR, the smallest of the five long-established US mainframe manufacturers in IBM's shadow, may give it a new lease of life before the demise of conventional systems architecture. Like much of IBM's Australian activities, its large 10ACC stand missed even the National Panasonic boat. The giant of large computer companies produced what could only have been an internal political compromise between departments.

The real problem on IBM's stand was common through most of the exhibition. It did not bring in people unless they already knew what they were looking for. But at least in IBM's case, a useful number of people simply looked for those three letters.

Across the aisle, Prime continued to show why it is Australia's number one computer company, overcoming its quite limited hardware range with its continuing emphasis on (mainly) locally developed software solutions. There was talk of the Prime pyramid being exported to the US for use by the parent company at exhibitions there.

Data General hardly succeeded in using *that* yacht race to advantage in attracting interest in its extremely important, if belated micro-computer range. (The combination of MicroNova and 8086 processors offers an extraordinary path for the many local OEMs who were brought up on early Novas, so taking DG back to its home territory without sacrificing the advances of its best minicomputer operating system AOS.)

In his usual style, Wicat's managing director Lionel Singer was quick to jump on the Australia II bandwagon, commissioning a videotape of highlights of the America's Cup series which was put together by a TV station after the first of the four days of the exhibition.

One of the few other stands to achieve comparable success was *Computerworld's* modest casino which collected the names and addresses of about 10 per cent of visitors to the exhibition by enticing them to bet play money on two games based on the company's products.

Of all the hardware at the show, one new-product class clearly dominated — high-powered briefcase portables. If the interest they attracted is any indication of likely sales rather than just novelty value, the market could be enormous. Their suppliers could hardly be better credentialled either, indicating the seriousness of the game with names such as:

■ President Computers distributing the Australian-designed and built Magnum on top of their track record with the Kaypro and other products.

■ Electronic Concepts launching Gavilan, in which an extra $A3000 will buy an in-built floppy drive and Lisa-like software to make it accessible to the wide group who cannot be reached by computer training.

■ Myer Computer and Business Centres pushing the Sharp, a big enough name in its own right.

■ Tandy making a comeback with its relatively economical Model 100, soon to be replaced by a more powerful version.

Motorola 68000 processor-based multi-user machines running Unix operating system were the other fashionable area. Two Australian machines, Unison and CMAD's CM2, were launched to compete with imported offerings including: NCR's Tower, Fortune and the one-year-old Wicat.

Of the IBM-PC compatibles, AWA's support of Corona could make it relatively important in Australia, while Seequa's well-named Chameleon looked like a white Kaypro at the stand of renamed Onyx distributor Horizon Computer.

Headliner of the new software offerings was Visicorp's Vision, which aims at competing in the general market against the dedicated software of Apple's Lisa *et al.* While Lisa itself has almost dropped into the old-hat category, Apple maintained its primary position in the micro world with a crowded cocktail party on site, the only real event which had more to do with the exhibition than with the accompanying conference.

Micros steal thunder

By Tony Smith

THE 10th Australian Computer Conference (10ACC) was aimed squarely at people interested in larger computers, the data processing department and academic types who dominate Australian Computer Society (ACS) membership. It was quite impossible, however, for the 10ACC organisers to shut out the excitement generated by booming microcomputer developments, and its contrast against the now quite staid and stable larger computer offerings.

One inescapable symptom of the slide into maturity being experienced by the traditional data processing industry was the popularity of nostalgia items at the conference. The first Australian to make his fortune selling software, Boyd Munro, won warm response to a paper which was principally a collection of anecdotes from the era of IBM's 1400 series and the earliest days of its System/360. A substantial portion of the papers presented addressed conventional problems of management of larger and larger software development projects.

Conference futurists, by and large, did not proceed beyond fourth generation languages, a subject which has been done to death and found wanting outside the very special niches for which successful 4GLs have been developed. One of the few speakers to address the much more important topic of human interfacing with any degree of credibility was Dr John Banning, of Gavilan Computing Corp, right out of the heart of microcomputing.

Graphics was considered separate enough from mainstream computing to score one of the five main lecture streams on its own, while the newly fashionable communications and networking areas grabbed large portions of the more generalised streams. The Japanese interest in fifth generation languages attracted little serious attention, suggesting that ACS types don't often pretend to look that far ahead or perceive irrelevance of anything Japanese when it comes to original design.

Australia's cultural cringe over high technology has never been more evident than in the programming of and non-participation in "The Trials, Tribulations and Triumphs of Software and Hardware Manufacture in Australia" stream. Hidden away at a safe distance at Melbourne Town House, the stream reached its lowest point when CDC's Australian chief, Trevor Robinson, presented an extremely well-prepared paper on the infrastructure requirements for a local industry . . . to only six people.

Followers of the fledgling Australian industry offered several explanations for the lack of response:

■ The remote venue was totally unsuited for attracting anyone prepared to broaden their experience by dropping in casually at individual sessions, whereas the graphics stream which shared the venue had at least its own modest core of regular attendees.

■ Most people with a genuine interest in the Australian industry were too busy trying to flog their products at the exhibition to be able to give the sessions the support they would have wished them.

■ The ACS was not genuinely interested in the success of that part of the conference, and only put it on for political reasons, by promotional inaction and hostile programming ensuring the stream's lack of support could be used as justification for avoiding further real consideration of the local hardware and software industries for a few more years.

■ (More charitably) the ACS is not equiped to reach people with an interest in the Australian industry and thus would have to look to joint participation of bodies such as ACEMA in future events to make them truly national and given any similar future stream a chance at the recognition it deserves.

At least the cultural cringe was a lot less evident at the exhibition. Dulmont's Magnum attracted as strong a response as any new product on show.

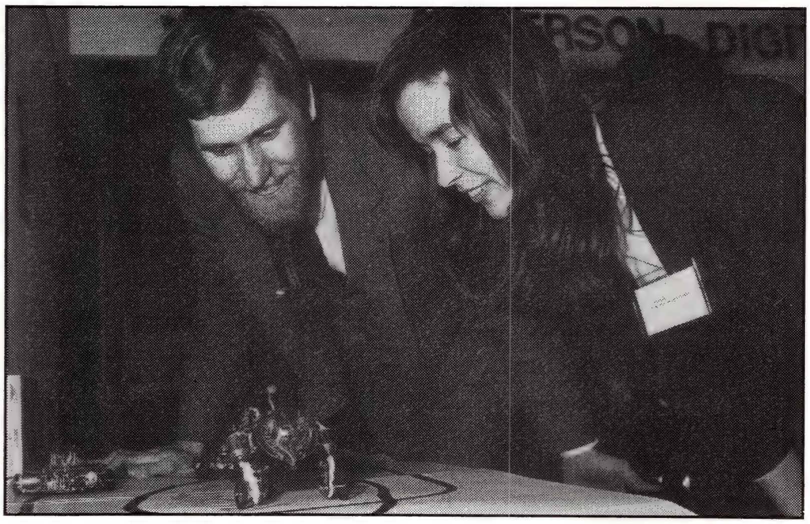
Magnum and Email's Unison were the two best known of the many Australian hardware products launched at the exhibiton, alongside the continuing promotion of many well-established local offerings. □

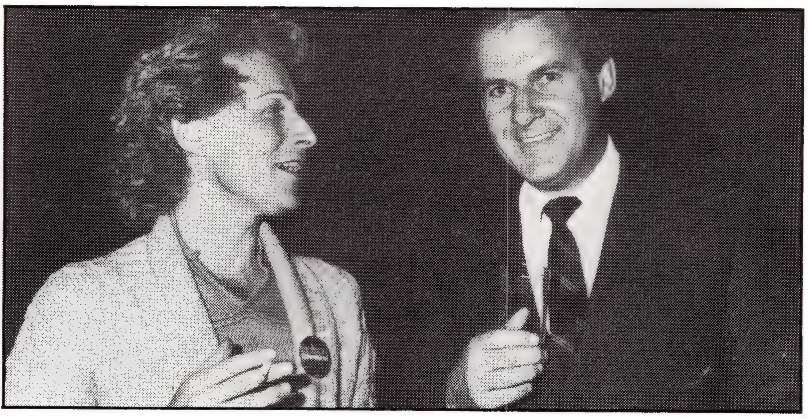
Mary-Louise Parkinson, of Apple, (left), demonstrates the Lisa to Rolf Exner, of Telecom Research Laboratories at the 10ACC exhibition. Elsewhere in this issue of Micro are details of Apple's price-cutting efforts on the Lisa.

10ACC in action

ICL
ICL
'WE SHOULD BE TALKING TO EACH OTHER'
'WE SHOULD BE TALKING TO EACH OTHER'

Looking for all the world like a Bedouin encampment, ICL's stand was not too out of place among the pyramids.





Computer technology and the arts merge as Karen Martin dances at 10ACC closing ceremony as computer-generated graphics mimic her steps. A humorous application (above right), intrigues Frank Deak and Klara Borsodi. Meanwhile, at night, Bill Hollier (left) designer of the Unison supermicro chats over a drink with Computer Power's MD, Roger Allen.

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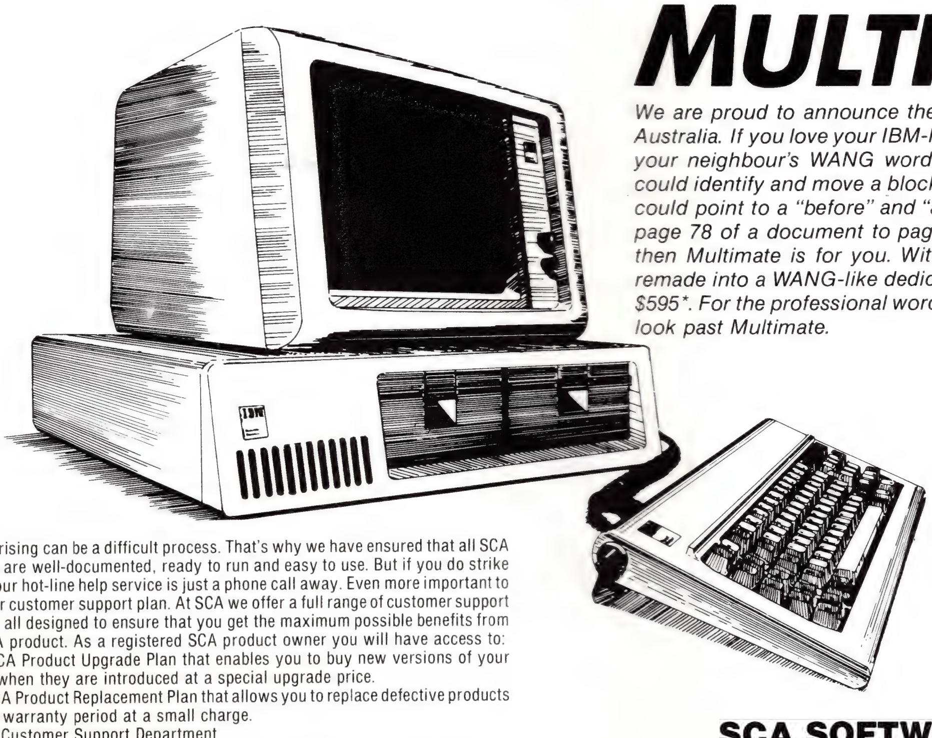

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Minsky won't mince words

As one of the creators of artificial intelligence science, Marvin Minsky has won the right to speak his mind — a right he exercised freely at a major symposium on AI and robotics, to the discomfort of his listeners. Michael Swaine was there.

ARTIFICIAL intelligence pioneer Marvin Minsky does not believe in pulling his punches. He peered out at the ranks of scientists and engineers and said: "When I see what many people are doing today in robotics and vision, it makes my blood boil, because the things aren't as good as they were a decade ago."

As his audience squirmed, he told them he was "scandalised by what is called robotics research in the United States". The best robot designer today might be an obscure toymaker in SIngapore. And, he insisted, today's most popular developments were based on basic research 15-to-20 years old.

Minsky was the keynote speaker at a three-day symposium on robotics and knowledge-based computer systems held in Gaithersburg, Maryland, organised by the US National Bureau of Standards.

First of all, he performed a bit of oratorical sleight-of-hand — the kind in which the magician tells you what he is going to do, then does it. He began his address with an explanation that, as a psychological trick to encourage good research,he often criticises other workers in their field overharshly. "I'm a complainer," he admitted. "I'll say, 'that's terrible'. It's a psychological trick."

He then proceeded to vex several of the engineers in the audienced with just that trick.

He said commercial robotics in the US consisted of "300 robot arms, all essentially the same. If any of you are engaged in a robotics project, either make it very good or cut it out.

"Why," he demanded, "doesn't somebody take this seriously?"

Minsky also dropped a gauntlet in the path of designers of what are called expert systems or knowledge-based systems. These systems typically use If-Then structures called productions to represent the knowledge of an expert in a field such as medical diagnosis or oil-well drilling. A market exists for expert systems because in certain decision-making situations, the systems are better than the human experts in the field.

Minsky said, "The basic outline of true production-based expert systems that are popular now was explained very clearly to the scientific world in a book by Newell and Simon in 1969. The details of the cognitive elements of these expert systems that everybody thinks are the latest things are 14 years old.

"Let's not confuse the products of research from 15 or 20 years ago with basic research. There's precious little of that going on in this country."

After dismissing as fundamentally derivative all the current work on commercial products of artificial-intelligence work (although he graciously conceded that there was doubtless "*something* original in almost every one of these papers"), Minsky told the fidgeting engineers in the audience what he wanted to see examined in AI research — intelligent learning.

"An incredibly small amount of work is being done on intelligent learning," Minsky said. "Fewer people are working on learning now than there were 30 years ago."

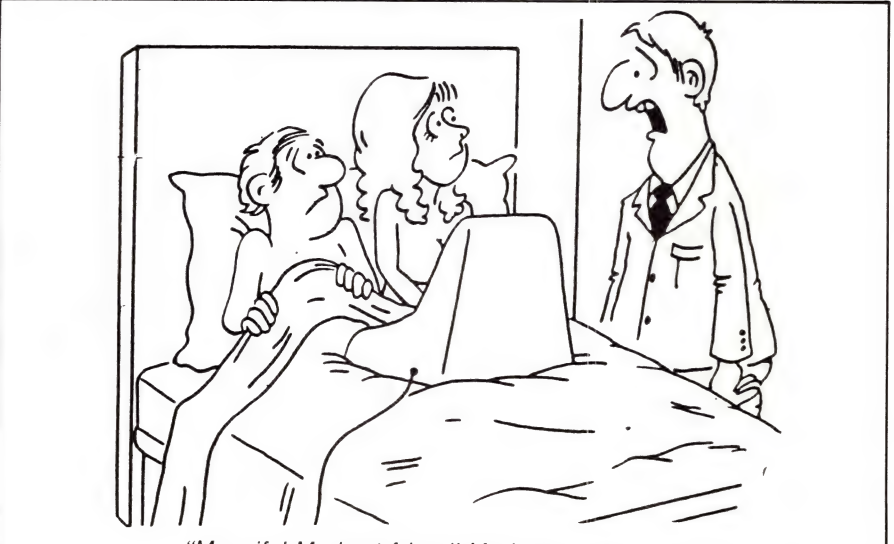
Learning — in the sense of self-modifying systems — was one of the earliest interests of computer scientists, and was one of the major divisions of artificial intelligence from its earliest days. Recently, however, most AI researchers have been working in other areas.

"It was appropriate to abandon efforts (in machine learning) until we had a theory of the representation of knowledge," Minsky said, because a machine can't learn what it has no way to represent. "Now we have four or five such theories, and I don't see a movement back."

Minsky described the development of expert systems as a sort of scientific detour: "Making expert systems was never a *scientific* goal (though maybe a practical goal), but a subgoal." The scientific interest in developing expert systems was the possibility of investigating different representations of knowledge, Minsky reminded his audience.

Even in practical terms, Minsky thought, expert systems need help. "If we're going to get anywhere with the expert-systems movement," he said, "we've got to devote a fraction of our resources to understanding how to make those systems learn." ☐

• *Michael Swaine is a staff writer with InfoWorld.*



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ASK is without doubt the best piece of computer programming I have ever seen, says Tony Smith. It would have to do well in an open programming contest, except that it could not sensibly be restricted within even the broadest categories into which the industry divides software.

ASK is educational — a brilliant auto tutorial with effective graphics and meaningful response to operator input. It is part tool, part application package, being able to be applied to a broader base of situations than can most packages, but also providing more goal oriented data manipulation than comes with other general purpose software tools.

ASK could easily be classed as a game, it is something you "play" through until you get it right then go back to sharpen up on individual points. It also uses novel sound effects and graphics to give it the friendliness of a good game.

But ASK is strictly a very important commercial business package, taking the concept of management information systems one step beyond where anyone else has got them to. It processes a company's financial data to produce meaningful business accessments and recommendations.

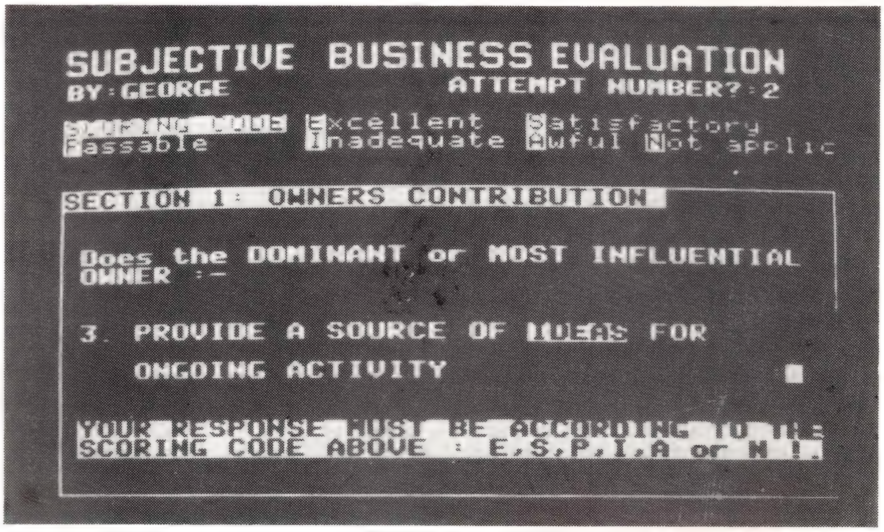
ASK's foundations are significantly in statistical data processing, with questionaire evaluation techniques and analysis of variance both used, and the basic formulaes applied to the individual business based on a statistical analysis of North American small business failures.

Such excellent software design and the integration of so many disparate features into a single product quickly identifies ASK as being Australian. In fact, it was written by a small software house based in Victoria's second city, Geelong. That company, 6S Business Advisory Pty Ltd, had previously developed a successful range of accounting and vertical market packages for the Apple.

ASK, like 6S's other products, was developed under the Apple (UCSD) Pascal operating environment, thus making it potentially portable to other systems supporting UCSD Pascal such as the IBM PC and Sirius I. ASK itself was largely written in Pilot with Turtle graphics, and non-Apple implementations of Pilot under UCSD have particularly slow graphics, so 6S is expected to soon develop a CP/M-86 GSX graphics version to attack new markets.

6S calls ASK a business evaluation tool. The initials stand for Accounting Scenario Key. The product is delivered in a very neat package with the three double-sided Apple diskettes needed to provide all the software and some data storage space.

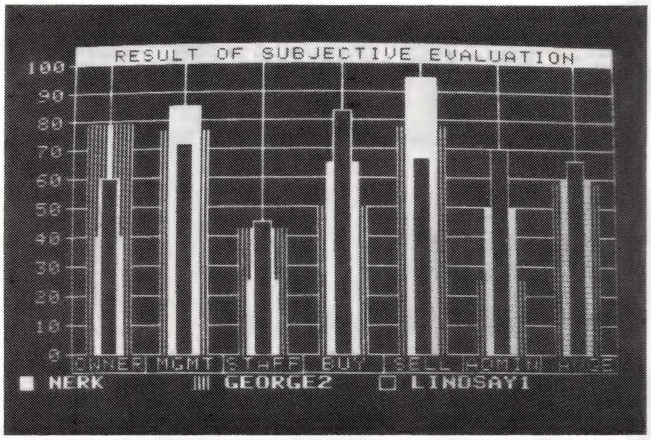
The operating documentation is thin enough at 12 pages, half of which is illustrations, to be also used as



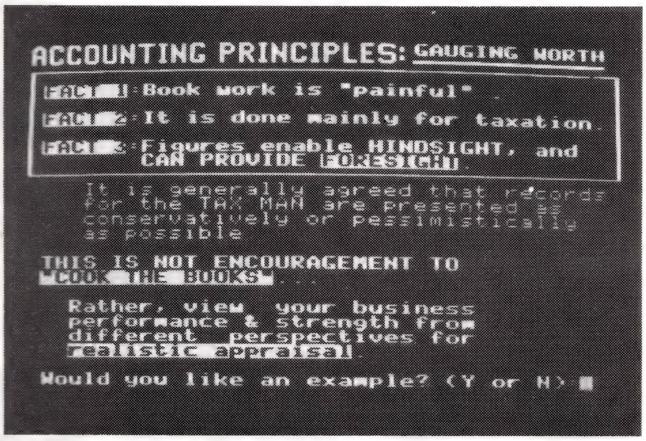
```
SUBJECTIVE  BUSINESS EVALUATION
BY:GEORGE                ATTEMPT NUMBER?:2

SCORING CODE  Excellent   Satisfactory
Passable      Inadequate  Awful  Not applic

SECTION 1:  OWNERS  CONTRIBUTION

 Does the DOMINANT or MOST INFLUENTIAL
 OWNER :-

 3. PROVIDE A SOURCE OF IDEAS FOR

    ONGOING ACTIVITY

 YOUR RESPONSE MUST BE ACCORDING TO THE
 SCORING CODE ABOVE  : E,S,P,I,A or N !.
```

A rating code covers all planning possibilities from excellent to awful to not applicable. Rate your business as you see it.

'ASK is . . . the best piece of programming I have ever seen.'



Up to 15 files are stored for graphic review. These may be overlayed for visual comparison.



```
ACCOUNTING PRINCIPLES: GAUGING WORTH
FACT 1: Book work is "painful".
FACT 2: It is done mainly for taxation.
FACT 3: Figures enable HINDSIGHT, and
        CAN PROVIDE FORESIGHT.
    It is generally agreed that records
    for the TAX MAN are presented as
    conservatively or pessimistically
    as possible
THIS IS NOT ENCOURAGEMENT TO
"COOK THE BOOKS"...
   Rather, view your business
   performance & strength from
   different perspectives for
   realistic appraisal.
Would you like an example? (Y or N):■
```

In overview style the program establishes the objectives of accounting.

promotional material. Yet ASK being largely autotutorial, it is more than enough information to enable full utilisation.

ASK sequentially intermixes two main techniques: tutorials on accounting principles and analysis of user entered data.

The tutorials go through: defining profit (refered to as the program purpose), estimating business worth, double entry ledgers, accounting report evaluation. This information is targeted by 6S at business people who only afford to see their accountant once a year.

Data entry and analysis covers: a subjective evaluation of the business, estimation of return on investment, business performance and trends, financial management, asset management and forecasting.

ASK makes extensive use of graphics to illustrate its analyses of the data provided.

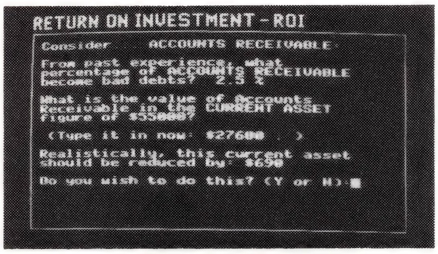
One of the keys to the attractiveness of ASK is its apparently friendly approach to the person using it. When it reviews the figures for a typical "living dead" small business, it often comments "undoubtably your company's greatest asset is you."

The effective porting of ASK to other equipment will present a challenging task by virtue of its effective use of some peculiar Apple features. Forty-character wide lines provide much greater readability for individual screens than if an attempt had been made to use the 80-character width of most screens, even more so when mixed with graphics and even larger text.

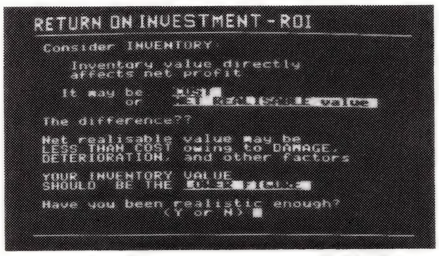
The very primitiveness of the Apple speaker enables it to be programmed to crudely synthesise human speech and that ability is used effectively on occasions, particularly to inform the user that he has made an invalid response.

ASK presented some insurmountable difficulties for a reviewer: what on earth could it be compared with, and whether to become fascinated by the program design achievements it embodies or to simply get on with applying it to one's own fantasy business.

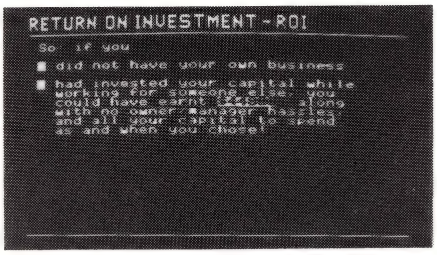
The only way to make any kind of assessment was to expose ASK to a small number of business oriented people with varying levels of expertise. Their reactions varied from sheer fascination to becoming as hooked as if they were playing a good adventure game.



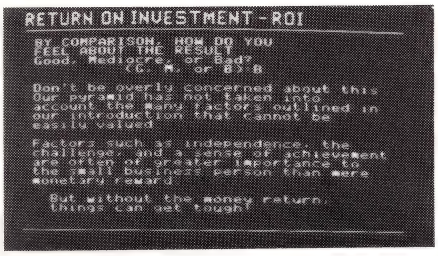
```
RETURN ON INVESTMENT - ROI
 Consider    ACCOUNTS RECEIVABLE
 From past experience, what
 percentage of ACCOUNTS RECEIVABLE
 become bad debts?  2.5 %
 What is the value of Accounts
 Receivable in the CURRENT ASSET
 figure of $55000?
  (Type it in now: $27600 . )
 Realistically, this current asset
 should be reduced by: $690
 Do you wish to do this? (Y or N):■
```



```
RETURN ON INVESTMENT - ROI
 Consider INVENTORY
    Inventory value directly
    affects net profit
   It may be   COST
          or   NET REALISABLE value
 The difference??
 Net realisable value may be
 LESS THAN COST owing to DAMAGE,
 DETERIORATION, and other factors
 YOUR INVENTORY VALUE
 SHOULD  BE THE [illegible]
 Have you been realistic enough?
              (Y or N) ■
```

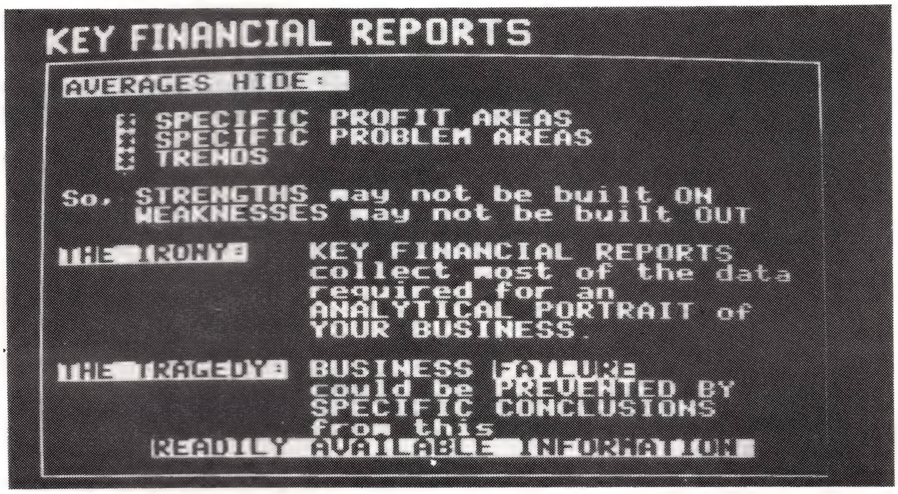


```
RETURN ON INVESTMENT - ROI
 So  if you
 ■ did not have your own business
 ■ had invested your capital while
   working for someone else, you
   could have earnt [illegible] along
   with no owner/manager hassles
   and all your capital to spend
   as and when you chose!
```



```
RETURN ON INVESTMENT - ROI
 BY COMPARISON, HOW DO YOU
 FEEL ABOUT THE RESULT
 Good, Mediocre, or Bad?
          (G, M, or B):B
 Don't be overly concerned about this
 Our pyramid has not taken into
 account the many factors outlined in
 our introduction that cannot be
 easily valued
 Factors such as independence, the
 challenge, and a sense of achievement
 are often of greater importance to
 the small business person than mere
 monetary reward
   But without the money return,
   things can get tough!
```

To proceed to in-depth analysis we need to expand the ROI database to cover a number of periods. This will then enable the discernment of trends.



```
KEY FINANCIAL REPORTS
 AVERAGES HIDE:
      ■ SPECIFIC PROFIT AREAS
      ■ SPECIFIC PROBLEM AREAS
      ■ TRENDS
 So, STRENGTHS may not be built ON
     WEAKNESSES may not be built OUT
 THE IRONY:   KEY FINANCIAL REPORTS
              collect most of the data
              required for an
              ANALYTICAL PORTRAIT of
              YOUR BUSINESS.
 THE TRAGEDY: BUSINESS FAILURE
              could be PREVENTED BY
              SPECIFIC CONCLUSIONS
              from this
       READILY AVAILABLE INFORMATION
```

What gets hidden behind the "bottom line" can cause disaster.

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The Advanced Personal Computer.

The Personal Computer of the Year was chosen by a distinguished panel of judges selected by Your Computer Magazine. NEC will be happy to provide specific details of the judging criteria.

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Personal Computer Software

16-BIT SOFTWARE AVAILABLE FOR ADVANCED PERSONAL COMPUTER

SOFTWARE

Category A:

Software sold by NECISA as the sole distributor of these packages on NEC personal computers. Full support provided by NECISA.

Category B:

Third party software with which NECISA is familiar and has demonstrated and tested and for which first line support may be obtainable from NECISA, but no warranty is implied. Product is obtainable from author or under certain circumstances, via NECISA.

Category C:

Third party software which is claimed to run on NEC Personal Computer products but which NECISA has not, as yet, fully evaluated.

Operating Systems

CP/M-86 Version 1.1	(A)
MS-DOS Version 2	(A)
P-SYSTEM Version 4	(A)

Languages

R.M. COBOL	(A)
C/BASIC-86	(B)
C.B.-86	(B)
PASCAL MT+/86	(B)
CIS/COBOL 86	(C)
DRI C 86	(C)
PL/1-86	(B)
SSS FORTRAN 86	(C)
RASM 86	(B)
CONTROL-C BASIC	(C)
SUPER SOFT C 86	(C)
PASCAL/M 86	(C)
JANUS/ADA 86	(B)
Computer Innovations C 86	(B)
MS-BASIC	(B)
MS-BASIC COMPILER	(B)
MS-BUSINESS BASIC COMPILER	(B)
MS-PASCAL	(B)
MS-FORTRAN	(B)
MS-C	(B)

Telecommunications

I.E. Asynch-86	(A)
I.E. Bisync – 80/3780	(A)
I.E. Bisync – 80/3270	(A)
MODEM 86	(B)

Word Processing

Benchmark Word Processor	(A)
Benchmark Telecommunicator	(A)
Benchmark Mail List Manager	(A)
Wordstar-86	(B)
Mailmerge-86	(B)
Spellstar-86	(B)
Spellbinder-86	(B)

Data Management

dBASE II 86	(A)
Dataflex 86	(C)
Condor 86	(C)

Productivity Tools

Access Manager 86	(B)
Display Manager 86	(C)
Diagnostics/2 86	(B)
Disk Doctor 86	(C)
RASM 86	(B)
Sid 86	(B)
VEDIT 86	(B)
Word Master – 86	(B)

Financial Modelling

Micromodeller	(C)
Microplan Spreadsheet	(A)
Microplan Business Planner	(A)
Microplan Consolidator	(A)
Scratchpad 86	(B)
Supercalc 86	(B)
Mars	(B)
MS-Multiplan	(B)
MS-Multi-Tool Budget	(B)
MS-Multi-Tool Financial Statement	(B)
Masterplanner	(C)

Accounting

IMS (Ascent) & (Executive)	(B)
Davidson	(B)
I.A.L.	(B)
Attache	(B)

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Plan a seminar success

Many of us will attend training courses over the next year. Some of these courses will be worthwhile. Some we will regret attending, loathing the waste of time involved. In this article, a consultant with Ron Pollak and Co outlines six key factors contributing to a successful training course or seminar.

THE six key factors contributing to a successful training course are the students, materials, facilities, computer resources, instructor(s) and course design. We will outline each factor in detail.

Students:

Possibly one of the greatest reasons participants leave a course disappointed is that their expectations have not been fulfilled. It would be ideal if course promoters clearly stated the objectives of a course.

Unfortunately, a specific statement of the course's objectives is likely to reduce the number of participants willing to attend. A statement such as: "This is a basic course which will enable participants with absolutely no experience with computers to become competent in Lotus 1-2-3" is unlikely to attract computer knowledgable people. So the promoter will advertise "Become competent in Lotus 1-2-3; attend our course".

Some participants are bound to leave this course disappointed.

From the presenter's point of view there are also a number of problems. Some participants will not have the prerequisite experience. Can an instructor discuss saving data on to a floppy disk when the user has no concept of how data exists in files and how files are written to disk by a disk operating system?

In this case, the instructor may be asked to teach unplanned topics. To do this is a real danger.

The best solution is to meet students who have questions outside the planned topic during a session break or at the end of the day.

Often the presenter will discover that the available material does not meet all the above tests. There is a trade-off necessary as it is impossible to develop the "perfect" course.

The class may be disrupted by late arrivals, early departures or other distractions. Often a class will contain a student who, even inadvertently, distracts other participants.

It might be the overtalkative student, the overly enthusiastic or the negative student. (You know the type; "I'll never understand this!").

The class is unlikely to be homogeneous in expertise, experience and desire to listen and learn. The instructor must cleverly pitch the presentation to cater for the different backgrounds and natures of the participants. It is generally difficult to accurately stereotype students and, therefore, correctly pitch the presentation.

This only comes with experience. On one occasion, when presenting a basic Multiplan course to some mainframe computer users, I found the participants became quite frustrated with the case studies. When they had a problem, they wanted to call me over to give them assistance.

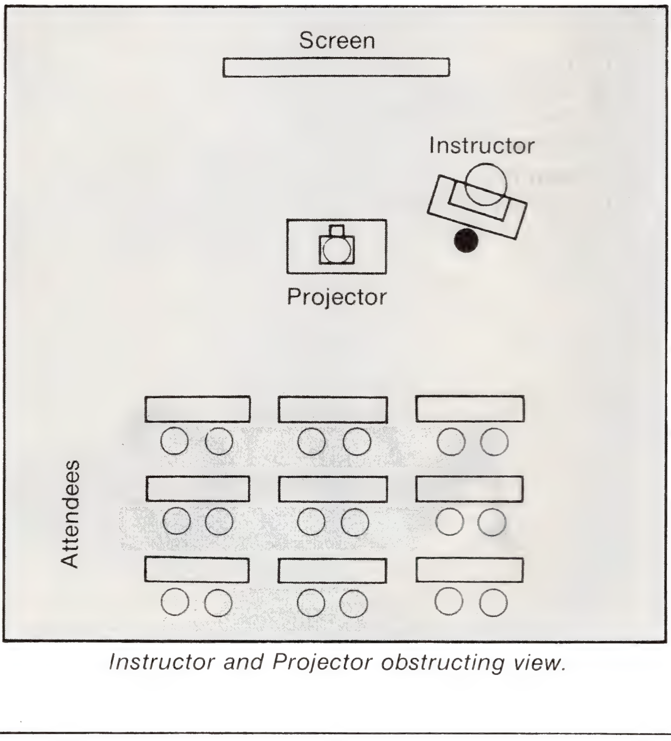
But at the time they needed me, I usually was busy with someone else. So they sat and waited until I was free.

Only when I realised their fear of hitting the Escape key (imagine what the Escape key could do to an update program) could I instruct them with the appropriate action when an error or unexpected result occurred. This usually meant hitting the Escape key and retrying the desired function.

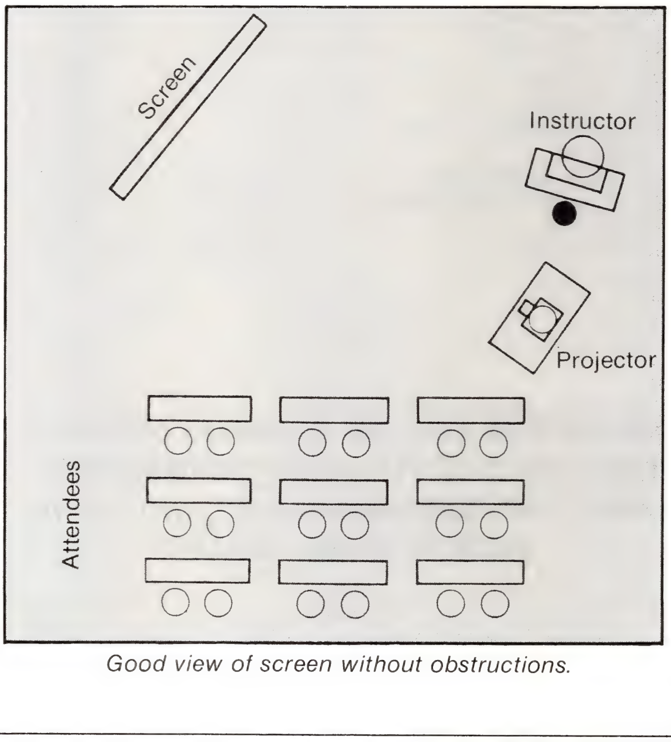
Materials:

Today, the array of training aids is vast. The trainer, among other aids, can use 35mm slides, films, video instruction, overhead transparencies, tape recordings as well as written materials.

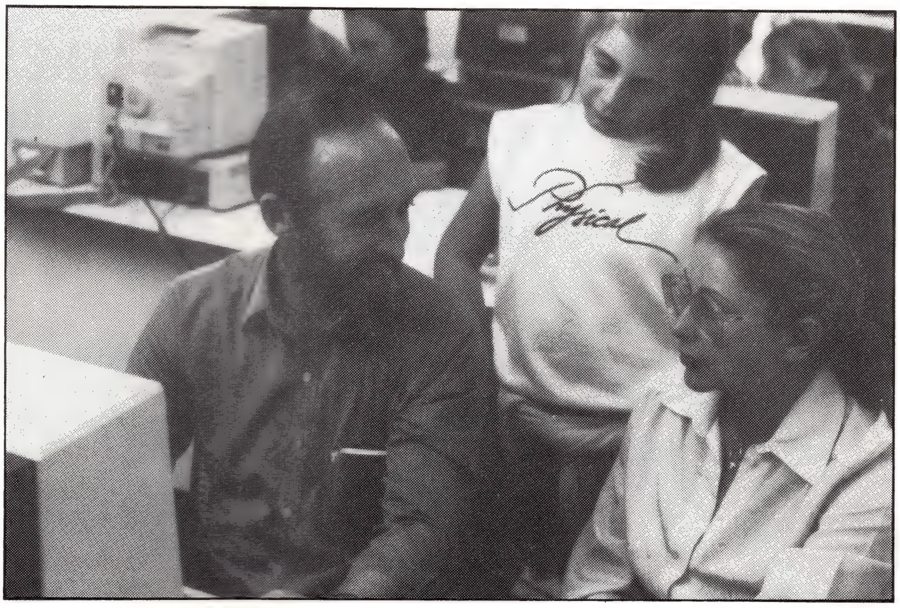
It is important to vary the teaching methods to keep the attention of participants. Too much of any one aid



Instructor and Projector obstructing view.



Good view of screen without obstructions.



Each course I design has participants working on the computers as soon as possible after they enter the room.

will mesmerise even the best of students.

Before the course starts, the presenter must ensure that the materials:

- Will be available when they are needed.
- Are legible.
- Are technically accurate and up-to-date.
- Are really necessary.

Often the presenter will discover that the available material does not meet all the above tests. There is a trade-off necessary as it is impossible to develop the "perfect" course.

First, there are the financial considerations. Second, the personality of the presenter will, most likely, differ from that of the course developer.

Third, as mentioned earlier, the attendees are unlikely to be an average group and consequently there will always be some possibility to enhance the course to meet their needs.

Finally, a course developed for flexibility will require a significant amount of preparation time. The presenter, often, just has to make do.

Facilities:

Most of us can recall how difficult it was during our school days to sit and concentrate in a hot, clammy classroom, when the chairs were uncomfortable and, because of the layout of the classroom, we were unable to clearly sight the blackboard. It is no different when you are older.

In the ideal classroom:

- The temperature should envigorate the student. This is particularly difficult when the air conditioning was not developed to cater for a dozen heat-generating computers.
- The furniture should be designed for comfort (rather than for easy stacking). A chair designed for seminars is unlikely to be satisfactory for sitting all day at a microcomputer.
- The latest equipment should be installed. There is nothing more upsetting than developing colourful overhead transparencies, and finding that you will have to work with a two-candle overhead projector, first used during the Boer War!

Once again, we have the promoter's book to consider. There are, however, some low-cost actions that bear consideration. Identify where the instructor will stand when using the various materials available, review the view-line of the participants.

A long, thin room is usually unsatisfactory for those participants stuck at the back. If possible, present from the side of the long thin room.

The screen used with overhead transparencies should be placed on an angle. It is still visible by all students and the instructor will not be standing in front of the screen.

Check the room thoroughly before giving the seminar. If it is obvious that the room is going to be hot, organise an extra coffee break.

Computer resources:

Murphy's Law was written long before there were computers, but corollaries to Murphy's Law (e.g., Murphy was an optimist) seem to have been developed by computer users.

It is important to have a technician around at the beginning of the day to power up the computers to check that they work. Even doing this is no guarantee they will behave properly at the required time.

It is ideal to have one computer per participant, satisfactory to have one computer between two participants and usually unsatisfactory in any greater ratio.

Instructor:

What sort of background does an instructor need? Computers, teaching, programming, business or entertainment? In these early days it is difficult to find the perfect mix.

The instructor will improve with each presentation. But initially, an instructor should attend courses on presentation techniques. For instance, 3M has a course showing how to use its equipment effectively.

Course Design:

The well-designed course is well organised, making it easy to present and, therefore, easy to follow.

It is easy to understand and contains only information relevant to the course being presented.

Who would have thought that the following course design could be unsuccessful?

- Start with a brief lecture outlining the theory.
- Give a demonstration using a television monitor attached to a microcomputer.
- Have students reinforce the first two sessions with a case study.
- Continue this cycle until all topics have been covered.

"The best-laid plans . . ." It was unsuccessful because it did not take account of the participants' inner desires.

They wanted to get their hands on to the microcomputers as soon as they saw them instead of having to sit around and listen to a long dissertation (and in this environment "long" can be very frustrating).

Conclusion:

As a final word each session should be entertaining. This can be achieved by using caricatures with your visual aids, by relating an experience that you may have had and by adopting a pleasant attitude to the day's events. □

If you're about to buy a micro-computer, don't talk to somebody who's bought one...

Sometimes the best advice can be the worst kind,
particularly when it's the basis of a major business decision, like the purchase
of a new computer system. Talking to one company, one man or
one user may fill you with information that can have its short-comings.
To get all the info, all the best unbiased advice
you should seek out someone who knows all the systems.

...talk to somebody who's bought hundreds.

Someone like Harry Henderson.

Harry Henderson can tell you everything there is to know about micro-computers. He sells every one he buys. As Manager of the Myer Computer and Business Centres, Harry buys millions of dollars worth of all kinds each year.

And what does he look for in a computer system? Basically Harry has a set of criteria that determines all his (and most often his customer's) requirements. They are 1: Easy to buy. 2: Well priced. 3: Adequately supported by software. 4: Well supported by the manufacturer. 5: Technically sound and innovative. 6: They are designed to meet a need. So if you're talking about investing in a micro-computer you'll now understand why you should be talking to Harry Henderson.

Harry knows his Apples!

Apple IIe Business Solution:
The ever reliable pioneer of the micro-computer era has always had one major problem. The fact that it has been over priced. Myer has put together three packages that have overcome this.

The Business Starter System:
Apple IIe, 2 Disk Drives, 80 Column Adapter, Monitor II and a Printer Interface for just **$2,595.** With business software, Business Graphics, Visicalc, Quickfile, Apple Writer II for just **$3,495.** And with the PX80 Printer for just **$3,995.** This incredibly priced system will save you over $1,600. This offer extends until Christmas.

And his NEC's, IBM's and ICL's like the ABC!

The NEC Advanced Personal Computer with Free D Base II Program:
This is an excellent computer. It represents the latest in computer technology and high value disk storage. The HO2 computer represents the complete computer system with 128Kb of memory and 2 million bytes of disk storage. Priced at $4,914 it is an excellent system, let alone the free Database (D Base II) program Myer is now offering with each NEC APC computer.

It is no wonder this computer received Your Computer's Personal Computer of the Year Award.

The NEC PC 8201 Hand Held Computer:
This is a complete and portable computer. When we first saw this at NEC it had two problems – no software and an average price. Myer fixed this by putting over 40 programs together and pricing it at $995. This is hundreds of dollars below its nearest competitor making it a must for every business person.

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ICL's Networking Capability:
ICL is the newest addition to Myer's range. When you have a need for a multi-terminal computer, we believe that the technology and support from ICL is ideal.

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To enhance your computer you must have access to programs. Myer has chosen wisely, and resultantly a large choice is yours. Ask any of our consultants to explain the features and benefits of the software to you.

And It Is Not Just Computers:
The Computer and Business Centre not only sells computers. It offers an entire range of office automation equipment, facsimile machines, typewriters, telephones, calculators, dictaphones and pocket pagers.

Harry also knows how to please Accountants.

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.... there's really no sound financial reason for any accountant to baulk at the proposition. Plus of course, there's the Myer installation pack which offers installations, training and other on-going discounts. So when it comes to buying a micro-computer we believe we have everything you need . . . including good unbiased advice.

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Library pitfalls

Implementation and use of data library techniques and controls often are ignored by individual personal computer users and organisations that have developed a personal computer processing strategy, as David Angeloro points out.

PERSONAL computer users soon collect substantial numbers of data and software files that are located on floppy and/or fixed disks that are physically remote from the organisation's central data processing facility.

It is common for a single user to have more than 100 floppy disks that contain software, personal databases, word processing, financial models, and other information. When this is considered in the context of an organisation with many personal computer users, the value and cost of this data and software is often substantial.

Personal computer data and software should be controlled through formal data library techniques. The identification and location of personal computer files, proper authorisation before a user has access to a particular set of data, and protection from accidental or intentional data loss or destruction are major objective of these data controls.

Data library techniques are well known concepts to data processing professionals who are involved in the use of mainframe and minicomputers. These techniques often are supported by data library software, specialised library facilities, and trained staff. Users are seldom involved, as these activities usually are performed at the organisation's central computer centre.

Personal computer systems have not yet developed these important techniques, but their need is indisputable. The techniques may be implemented centrally for a group of personal computers, individually for a particular personal computer, individually for a particular user, or a combination of the three approches.

The minimum data library techniques that should be considered include:

- Identification of files and data storage media.
- Data library maintenance procedures.
- Data security and authorisation sprocedures.
- Backup and restoration procedures.

With a little ingenuity, these techniques can be automated, so they are not too complex or time-consuming for non-technical users.

If valuable data and software are not to be lost or forgotten, proper control must be maintained over the naming of personal computer files and data storage media.

Personal computer users often will search through many poorly labelled floppy disks to locate a particular data file. This can be time-consuming and frustrating, often resulting in the creation of the required data or abandonment of the processing task.

Personal computer operating systems usually allow only a short (usually eight-character with optional three-character suffix) name to be affixed to a data and software file. There is no description or other data that would assist a user later to identify the file. The display or listing of the disk directory only shows this short name.

File identification

A data library standard should be developed to control the naming of data and software files. This naming convention would include the use of a suffix or prefix to identify the type of file (for example FILENAME.DAT for data file, FILENAME.BAS for basic program, FILENAME.WPT for word processing text, etc for CPM files).

To enhance identification of data and software files, a register of the operating system's file names, plus brief descriptions should be maintained. This register can be manually maintained or automated. A manual system would involve an index file where each card would contain a file's operating system name, plus its description.

The cards would be organised in operating system name sequence for easy scanning and retrieval. An automated system would be developed using word processing or personal database management software.

The advantage of an automated system include the ability to search for keywords within the description. A data library standard is also required for identification of data storage media. Personal computer data storage media include floppy disks, fixed disks, tape cartridges, and tape cassettes.

Personal computer operating systems seldom have any method for identifying a particular data storage medium, except for its location in a particular data storage unit or drive. Identification is only achieved through a label affixed to the data storage medium's outer casing. Each data storage medium should be identified by a unique volume number clearly displayed on its casing.

These volume numbers can be allocated sequentially when the data storage medium is purchased and should not be altered. There should not be duplicate numbers nor should a number be reused after the data storage medium has been disgarded.

Data maintenance

The data library needs to be maintained so each file can easily be located on a particular data storage medium and the medium can be located within the data library. There are two general techniques for organising the data storage media within the data library.

The first technique is to organise the media within categories — word processing media, financial modelling media, etc.

This technique reduces the number of data storage media that need to be manually searched when the volume number is not known and the medium's outer label contains adequate descriptive details. The second technique is to organise the data storage media in volume number sequence.

This allows a particular medium to be found directly when its volume number is known. To locate a particular file, the contents of each data storage medium need to be scanned.

Using the file's operating system name, the file directory of the data storage media can be searched. This requires printed listings of each file

Library pitfalls...

directory (this facility may not be available) or each data storage medium must be loaded and its file directory displayed.

Another method is to record manually the file directory on the data storage medium's outer label. The above manual techniques are cumbersome to maintain. Through the use of word processing or personal database management software, the data library's information requirements can be automated.

A database record containing the volume number, operating system name, and file description can be created for each file. Using the features of the software, this database can be easily scanned using the file's operating system name or file description keywords to locate the data storage medium's volume number.

File directors for each data storage medium also can be produced easily, plus other simple data library reports. A useful enhancement to this data library database is the inclusion of an owner, dreation date, retention period, and last used date.

This information would enable the data library periodically to purge obsolete files and would release data storage media for productive uses. Using this automated technique, the data storage medium's outer label only needs to contain the volume number.

Since the data storage medium has no descriptive details on its label, unauthorised staff are frustrated while locating a particular file unless they have access to the data library's database.

When users control their own personal data library, the problem of data security and authorisation is relatively simple. The owner of the data library should store the library in a secure place (locked filing cabinet, desk drawer, etc) and allow access to particular data storage medium at their own discretion. When a central data library is maintained, data security and authorisation need to be carefully planned and administered.

Someone within the office should be allocated the responsibility of data custodian. This individual would ensure that the data library was secure from unauthorised access at all times.

When the fixed disk does not possess a lock, data security may be achieved by hardwiring the fixed disk unit into a special power outlet that can be locked in the off position. Each night the power point would be locked off and therefore the disk could not be used.

Data authorisation of fixed disk files is extremely difficult, unless the operating software allows for file protection. This is particularly true when the fixed disk is shared by multiple personal computer systems or is part of a local area network. Where file protection facilities are inadequate, files requiring authorisation should be maintained only on floppy disk.

A major function of any data library is to ensure all data and software files are not accidentally or deliberately lost or destroyed. This involves the implementation of proper backup and restore procedures.

There are usually several levels of backup for each file, plus an offsite backup to secure against a major calamity at the processing site. Individual personal computer files are seldom backed up.

Where the personal computer or local area network is connected to the central computer facility, backups may be created by downloading the files to the central computer site. A register of backup copes should be maintained. For each backup data storage medium, there would be a database record containing the volume number of the backup medium, the volume number of the medium that is backed up, owner, creation date, retention date, and last restore date.

This can be easily incorporated into the data library database by using the volume number as is, the file name as the volume number of the medium backed up, the description as 'Backup Copy', the owner as the same as original copy, creation date as the same as original copy, and last used date as last restore date.

Backup copies are usually produced periodically. Only those data storage media that have been altered since the last backup period require backing up.

The data custodian is usually responsible for producing the backups. This usually involves producing a new copy over the oldest backup copy of the data storage medium.

Offsite backup copies are required to ensure restoration of data and software after a major calamity. Offsite backup may be dispatched to the central computer facility, another site within the organisation, the local bank, or with another external organisation.

Offsite backups are usually created once per month or more frequently for particularly important data. Bought software often presents a problem to backup procedures. ☐

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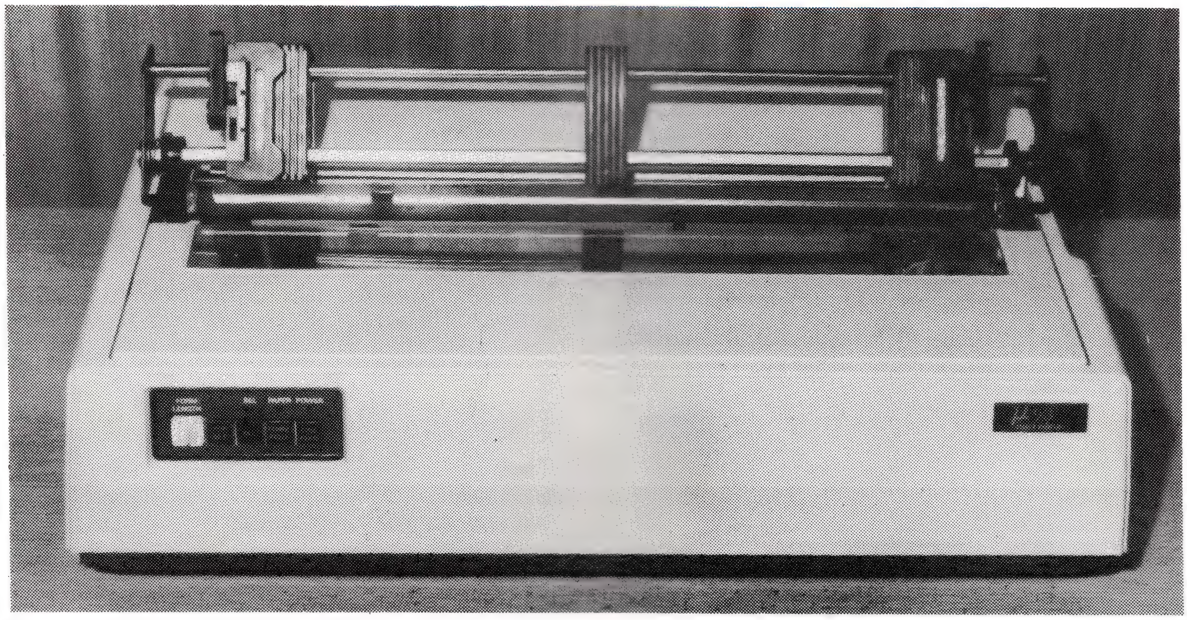

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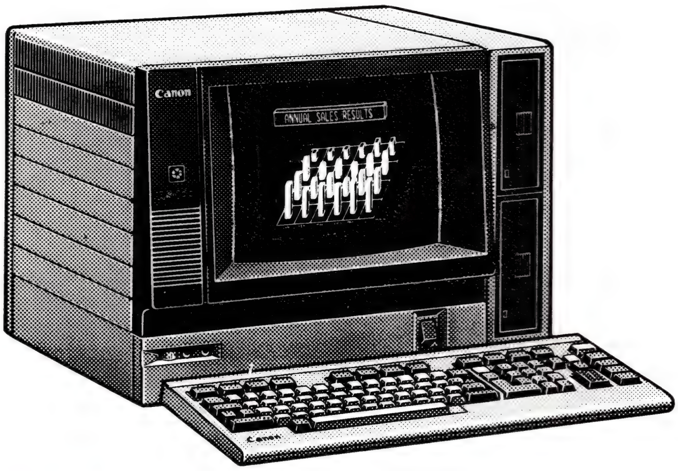

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Facing up to change

The NSW government, through the Technology Research Unit, is trying to take positive steps along the road to technological change. Ian Webster reports . . .

THE New South Wales Government established the Technological Information and Research Unit (TIRU) late in 1979, following an undertaking by Premier Wran in his 1978 election policy speech that his government would establish an advisory unit to advise the government on ways of offsetting the disruptive effects of change and "to make technology work for the people".

Pat Hills became Minister for Technology as well as Industrial Relations in the 1978 and with advice from Associate Professor G.W. Ford of the University of New South Wales, established the Technological Information and Research Unit.

The unit was established by the Department of Industrial Relations to gather information on all aspects of technological change, commission research where necessary, obtain a better understanding of social and economic implications of technological change, consult with all groups interested in technological change and provide the government with advice.

Ron Mulock became Minister for Technology in 1980, and the TIRU was renamed the Technology Research Unit (TRU) and moved its present location at 151 Macquarie Street, Sydney.

The TRU's most important concern is the effect of technological change on the number, kind and quality of jobs. Its wide-ranging brief covers not only the direct relationship between technological change and employment, but its implications for health, safety, welfare, industrial relations, training, retraining and education.

The TRU was well established by 1981 with a staff of 13, including director, Barry Smith, who had authored an important mid-70s report into Australian computer education with Barry deFerranti and had long involvement with computer education policy and a broadly-based interest in the policy implications of technological change. The staff included six research staff and several support staff with an information services officer.

The unit's activities have been many and varied. The main research effort has been directed towards case studies and monitoring aspects of technological change. Studies on word processing in the public service, technological change in the banking industry, video information systems, legislative approaches to industrial relations problems relating to technological change and several studies in conjunction with unions have been completed.

Policy advice has concentrated on the industrial relations aspects of technological change within the Public Service and NSW industry. The work done by the TRU with the Education Department on the implications for education played an important part in the development of the initiatives announced by the NSW Education Commission last year, and recent announcements by the NSW Education Department.

A cabinet reshuffle in 1982 saw Mulock move to the Education Ministry and the TRU return to the Ministry for Industrial Relations under Hills. Barry Smith was seconded to the Education Commission and then the Education Department where he has continued to push for the development of policy appropriate to the demands of technological change.

Since then, Rosemary Howard has been the acting director of TRU, which is about to be reorganised with the appointment of a new director and merged with the NSW Science and Technology Council.

The NSW Government established a cabinet committee on technology this year, comprising seven ministers to prepare a technology development policy for NSW, and a decision was made to combine the resources of the science and technology council with the TRU, under a director of technology, to be Dr Hulbeck, of the Department of Agriculture, to provide advice to this committee. The NSW government's main concerns are on the use of high technology to improve productivity of existing industries, rather than start new high-tech ventures.

The Technology Research Unit's librarian Egle Zizys.

The TRU will continue to concentrate on industrial implications of technological change and the human aspects. The joint research group will have seven research staff with seven support people.

The TRU has established one of the best collections of material relating to technological change and work in Australia. This collection contains most of the recent studies done in Europe and the US on the impact of change on health and work as well as an extensive periodical collection and book holdings.

This coillection is freely available to the public. The TRU has published a regular accession list since May last year, abstracting material received by the library.

The library is one of the few places where early Australian reports on technology, produced in the 1970s and material produced by the trade-union movement about technological change can be obtained.

Computer educators rarely have access to material about the real impact of technological change, preferring to present the visions of the futurists and computer marketeers.

The library contains a rare copy of the Transnational Co-operative's *Kit on Technological Change* which should be essential reading for any teacher aspiring to teach people about computer-based technology ☐

Benchmark it!

"It is valuable to compare the performance of your compiler with that of other, similar compilers. Do not worry about the possibility of yours being worse. The exercise of dreaming up favorable reasons for this will give you some training for being a software salesman. In any case, you would be very unimaginative if you could not find some test that showed your compiler in a good light. Many academic papers describing some purported advance in computer science are based on extremely carefully chosen examples."

— PJ Brown, Writing Interactive Compilers and Interpreters.

PETER Brown's somewhat facetious advice to compiler designers is also a perfectly serious warning to anyone who buys and uses software or computers. A good software peddler can show you a dozen test results that prove, beyond any doubt, that you should trade your grandfather for Cobol.

Advertisements for computers and software often carry claims about speed or efficiency of operation, bolstered by cryptic numbers. You may read with interest or dismay that HAL's newest sibling is a three-Mips machine or that the latest version of a popular computer is based on an 8Mhz microprocessor. What practical significance is there in these Mips and Mhz.

Manufacturers can be counted on to juggle performance figures in self-serving ways, but if you know something about the figures they are throwing around, it can make the difference between being a cynical victim and being an informed, discriminating sceptic. If you buy computer software or hardware, you need to know, in self-defence, what those cryptic numbers mean.

Of course, not everyone is trying to hoodwink you. Some people use these performance measures in a sincere effort to communicate some fact about the hardware or software. Product reviews often make reference to standard — or at least common — test programs. You need to know something about how performance measures are used if you want to be able to evaluate the evaluators.

"Mendacity sequence, n: An ISO standard sorting sequence allowing the F's in a truth table to be ordered by degree of falsehood. The basic sequence, in ascending order, is: lies; damn lies; statistics; damn statistics; benchmarks; delivery promises; DP dictionary entries." Stan Kelly-Bootle, "The Devil's DP Dictionary."

There are many measures of a computer's or a program's performance or abilities. Some are simply measures of obvious and significant features: the dimensions of the display screen, the number of bytes of user memory or the number of keys on the keyboard.

A benchmark tries to tell you something that's not in the specifications and tries to give you an indication of how the product will perform in its intended application.

A benchmark tries to tell you something that's not in the specifications and tries to give you an indication of how the product will perform in its intended application.

Benchmarks are most often used to evaluate microrprocessors, computer systems and software that runs programs, such as interpreters and compilers. These are all complex products, and running benchmark programs to test them is, in principle, a process as complex as the software or hardware under test.

For example, a compiler generates machine code from statements written in its language. There are thousands of tricks that machine language programmers have created for writing efficient machine code, and it is not fair to expect a compiler to be able to generate code that is as efficient or compact as code that a human programmer could write.

How efficient should the code be? Different compiler writers employ different tricks to optimise the generated code and achieve their greater efficiency in different ways.

There is no single measure of code efficiency, but one practical method for comparing the results of two compilers is to run several programs through them and look at the relative sizes of the machine-code files they produce. That's what Cortesi does. The more efficient compiler is the one that works with the smaller program.

"Benchmark problem: A problem used to evaluate the performance of several computers relative to each other, or a single computer relative to system specifications." — Charles L. Sippl, "Microcomputer Dictionary.

Benchmarks need not be used to compare one compiler or computer with another. Sometimes manufacturers use them to measure the actual performance against what the product ought to do.

The most useful employment for a benchmark, though, is to help you to discriminate between two products along some dimension. Benchmarks can be abused, and often are, but they can be useful tools if you wield them with intelligence.

Here is what benchmarks can do. They can measure selected aspects of the performance of computer hardware and software, primarily computers, microprocessors and programs like compilers, but to some degree including application programs and other hardware such as printers and modems.

Benchmarks can also assess speed in several senses: speed of operation and speed of generated code (for a compiler). Mostly, they are thought of as measures of speed.

They can produce these assessments for pure, artificial cases or for "typical" cases. For a typical case, the tester selects and mixes operations or tasks in proportions he imagines to be representative of what the intended user will experience over the life of the product.

The representativeness can enter

either at a low level, as in using common functions or procedures or algorithms frequently, or at higher level, by using real user-application programs.

"Benchmark program: A specific program written to calibrate the speed of a computer in a well-defined situation, or type of computation; e.g., scientific 'number crunching', sorting, or compilation". — International Micro computer Dictionary.

Different benchmarks measure different things.

The sieve of Eratosthenes is a commonly used benchmark. Named after the Greek mathematician who invented the algorithm, it is a method for finding prime numbers. Since the algorithm depends on many instances of checking the divisibility of one number by another, it is a reasonable measure of the speed at which a program of computer does integer arithmetic. Some people evaluate the speed of floating-point arithmetic using a routine called a Whetstone.

Ackermann's function is a recursively defined mathematical function that grows large rapidly and involves many recursive steps even for relatively small values.

In a test of microprocessor speed, DA Patterson used four benchmark programs: a string search, the sieve of Eratosthenes, a puzzle and Ackermann's function.

Ackermann's function is a recursively defined mathematical function that grows large rapidly and involves many recursive steps even for relatively small values.

A string search tests character-manipulation functions.

Even a program like Cortesi's Minimus is useful, as it serves as a baseline for other programs and measures programming overhead time.

"Obviously you cannot test all combinations of facilities, because this would take you into thousands and even millions of possibilities . . . You must produce a comprehensive test suite that covers every facility of the source language." — PJ Brown, "Writing Interactive Compilers and Interpreters".

Peter Brown is writing here of another kind of testing: testing a compiler for bugs and for proper operation before releasing it. The point applies with equal force to the selection of benchmarks, however, a well-chosen set of benchmark tests can give a lot of information about a computer or piece of software. A poorly chosen set can be even less informative than a single benchmark test.

When you read manufacturers' claims and magazine reviews of computer products, you have no control over what benchmarks or combinations of benchmarks they have used.

Despite the fact that reviewers sometimes refer, perhaps out of wishful thinking, to "standard" benchmark programs, there are no universally agreed-on benchmarks for evaluating hardware or software.

You can, however, look critically at the kinds and mixtures of benchmarks and decide for yourself how much and just what useful information they are giving you. There are some elementary considerations to keep in mind.

Combinations of limited benchmark programs that test different aspects of performance give you additive information. If the testers have run the sieve of Eratosthenes, a floating-point matrix-multiply routine and something like David Cortesi's Minimus, they have given you a more or less independent measure of integer arithmetic, floating-point airthmetic and program-overhead times.

The testers could also give you useful information by running several standard, public, application programs with standard data. It is important in this case that there be more than one such program, since the programs will mix together various performance features and will each be unfair to some tested products and over-generous to others.

One other kind of benchmark is worth mentioning, and that is the worst-case benchmark. This measure is not concerned with typical or representative performance at all, but is a means of ensuring that the computer or program will perform acceptably even in extreme situations.

Statistical programs are sometimes tested with "bad" data — data afflicted with multicolinearity or some equally abhorrent trait — to test the program at the extremes. ☐

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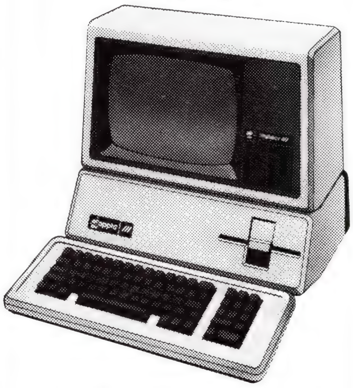

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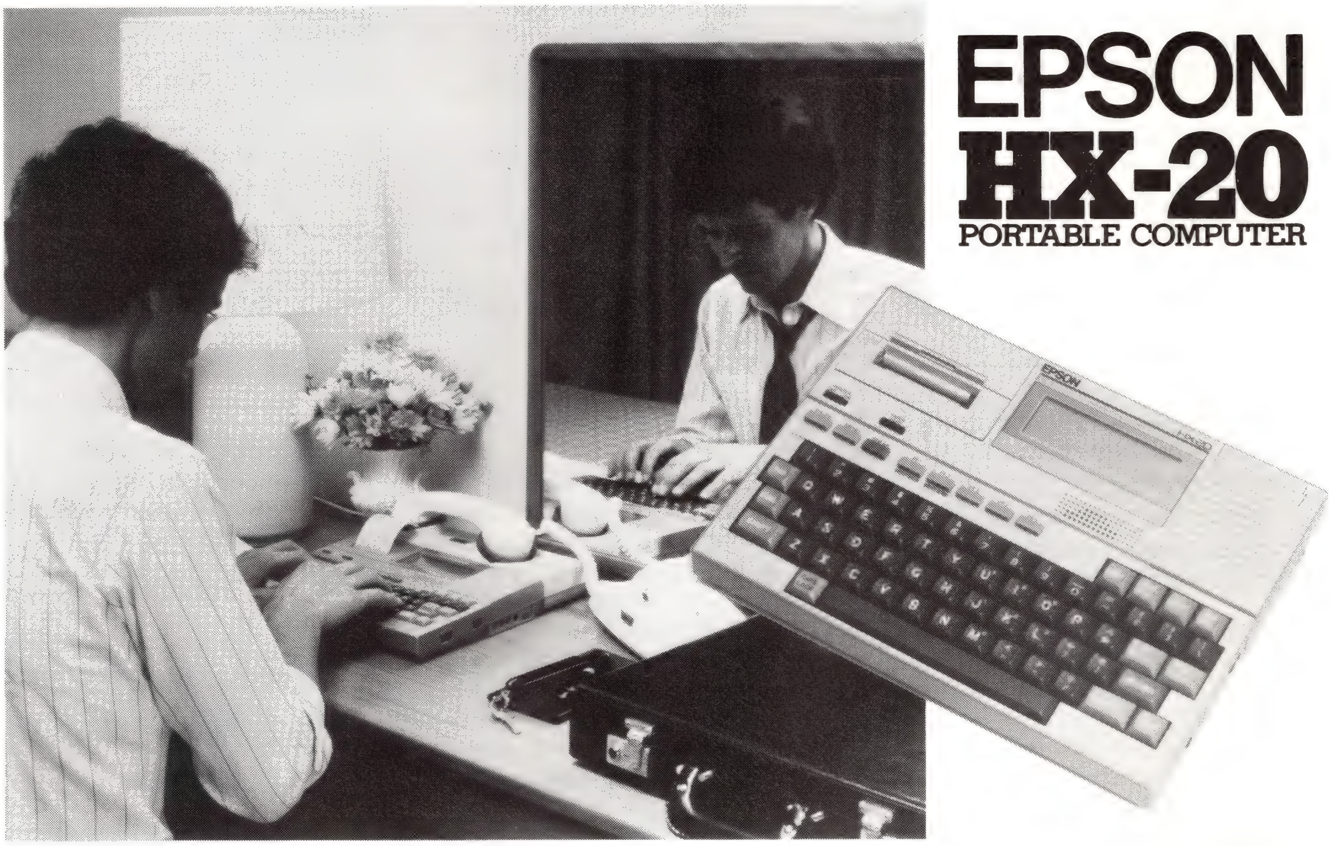

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Through paces with dBase II

Comparing the efficiency of one micro against another can produce startling results — especially in the light of glowing advertising blurbs. MJ Clarke puts a number of machines through their paces using a dBase benchmark he devised for the Labtam 3000.

IN my Labtam review I referred to the effect that the track buffering had on the speed of its data processing. I was so impressed by the Labtam's performance, I devised a program to really put this machine through its paces.

It seemed to me that, having devised such a program, the obvious thing to do was test as many other machines as I could, using the same criteria as I used with the Labtam. The result of this test is a benchmark which, should be of enormous benefit to the long-suffering public, offering a genuine means of comparing the efficiency of one machine against another.

So I have published the benchmark program here for you to not only see the conclusions, but the command file I used, so you can do your own testing, and draw your own conclusions. I have considered such factors as variations between features provided by different computers.

To be consistent, the benchmark ignores such things as timers, buffer spacing, etc. The benchmark is not affected very much by the space allocation process, although it produces a significant amount of data, processing that data to exercise the machine thoroughly.

The various phases of the program are designed to exercise all parts of the computer to maximum effect, and the total time taken by the computer is a measure of system performance. It is for this reason that my benchmark can be used to determine the raw performance power of a computer, including the monitor and disk drive.

I used dBase II to write the code for my benchmark, for several reasons:

- The code generated by dBase II for one 8-bit machine is the same as generated for any other 8-bit machine.
- The code generated for a 16-bit machine will be similar to the 8-bit code.
- I had both the 8-bit and 16-bit version of dBase II and it's a tool that I'm familiar with.

For those of you unfamiliar with my current favorite programming language (during my 25 years in the industry, I've used more languages than an Melbourne's had wet winters), I offer the following description The experts, naturally, can jump this bit.

DBase II message lines start with a "?", which simply means, "Print what follows". The code between each pair of "?"'s comprises the various phases which are explained as follows:

The first program section is initial setup, and takes only a moment. The code is intentionally microprocessor bound.

The string to numeric, numeric to string, string to string, and mathematical operations are functions that most programs consist of. This code produces a numeric field and character field in inverse sequence, both of which are used later in the program.

The effect of transfers of records to the disk and screen by the APPEND BLANK, REPLACE and DISPLAY statements gives an overall picture of the computer's power and ability to handle interrupts. On most machines, it was possible to see a pause in the scrolling rate when disk transfers took place. (With a 512-byte sector, this was every 10 records displayed.)

The second section generates an index on the prime media (Drive A) from the worst-case key field, producing a mirror-image index. The third section produces a mirror-image copy of the file on the alternative media (Drive B).

The fourth section, again a worst-case field, is used to sort the data to another file on the same disk drive. The fifth section generates another index on the prime drive, (again worst-case).

The final section uses both drives. Drive A provides the index, Drive B provides the data. The computer then displays the located information on the screen.

Interpretation of table:

Starting at the left of the table, the first four columns give the computer, the environment in which it was tested, and the type of disk system used as Drive A and B. Columns 5 to 10 give the

File structure for database file Labtam.DBF:

```
C, C, 5
A, C, 5
B, C, 25
N, N, 10, 5
M, N, 5
```

Gives a total of 51 bytes a record.

The command file code:

```
erase
use labtam
set talk off
stor 0.4 to z
stor 1 to x
stor 7 to y
1.
? 'phase 1'
do while x < 500
stor (X+00000+z)/y to mw
stor x/yto z
stor str (mw, 5) to ma
stor ma+ 'this is a test' to mb
stor str (500-x, 5) to mc
append blank
replace c with mc, a with ma, b with mb, n with z, m with x
disp
Stor x+1 to x
endd?
2.
? 'index'
index on c to labc
set index to labc
3.
? 'copy'
copy to b: labtam
? 'end copy'
use b: labtam
4.
? 'sort'
sort on c to b: labn descending
use b: labn
5.
? 'index'
index on m to labn
set index to labn
6.? 'find in reverse'
stor 249 to x
do while x > 0
stor str(x,5) to z
find &z
disp
stor x-1 to x
endd
? 'end'
return
```

stopwatch times at which the displayed message appeared on the screen. The actual time taken for the two Index phases gives the speed ratio between Drive A and Drive B.

Single-sided, single-density diskettes were used in Drive B:, where the computer had that capacity. In these cases the same 5¼in or 8in IBM single-sided, single-density disk was used.

The copy time gives a disk transfer capacity figure. The Sort time gives an indication of whether read after write is being used, and puts the alternative media through its paces.

At this juncture, I would like to draw your attention to the practice of using read after write. It slows the system performance dramatically. Read after write requires twice or three times as many disk revolutions as necessary to move every record during the sort.

The Sort process in my benchmark is a worst-case example, producing a mirror image of the file. This is where the major variation in times between computers occurs and I have to question the need for read after write.

There could be several reasons why this cumbersome process is used on some micros, but not on others. The most plausible is that the process protects the manufacturer against legal liability if the computer can be proved to have written erroneous information.

My experience shows that an intermittent problem often causes the computer to occasionally *miswrite* information.

Read after write, in this instance, provides an effective means of correcting and camouflaging computer errors, usually because of timing glitches, thereby saving the manufacturer considerable sums in terms of expensive man-hours to isolate the offending hardware fault.

The cost, therefore, is passed on to the end-user in terms of the efficiency of the computer. I would like to see hardware reliability improved so that this practice is unnecessary.

Conclusions:

The results of the test are rather eye-opening, and provide an interesting commentary on the claims made by some computer company advertising. Of all the machines tested, several actually failed to complete the program and required reruns and I put this down to faulty machines.

No attempt was made on any of the machines to prepare a clean-up system disk before benchmarking. The various phases were intended to be fairly rigorous, and the time taken by the various systems show the relative strengths and weaknesses of the computer, its monitor and disk system.

It is possible to use the results by interpolation and arrive at meaningful comparisons with any of the tested computer systems. The comparisons on the IBM PC between MS-DOS 1.1 and CP/M-86 gives a comparative figure for the operating systems.

I always thought the CP/M 86 implementation of the IBM PC was rather poor, and these figures confirm this. And, incidentally, taking these figures into account, which 47 machines are slower than the Olivetti M20 although the Olivetti benchmark was using the 8086 rather than the 28000 processor.

The Labtam with hard-disk and 8in floppy is clearly the fastest 16-bit machine tested. What surprised and even alarmed me, was the poor improvement achieved by the use of the 16-bit version of dBase II.

'As any programmer worth his salt will tell you, a translated program may provide the same facilities in a new target machine, but it will never provide the fastest code.'

An 8Mhz 8086 processor would be expected to have been the system used instead of a 5Mhz Z80, with at least an eight to five improvement in processing power.

The reason why this is not achieved is revealed when you look at the 8086 code. It is Z80 instructions translated into the 8086 constructs that provide the same result as the original Z80 instruction. These constructs often use five 8086 instructions to achieve the same effect as single Z80 instruction.

This means the 16-bit software is not really 16-bit at all, but translated Z80 code.

As any programmer worth his salt will tell you, a translated program may provide the same facilities in a new target machine, but it will never provide the fastest code.

The Discovery Z80 system is a powerful shared bus computer, and shows just how much power multi-micro systems can deliver. The 16-bit machines, excluding the Labtam, Discovery and possibly the IBM PC XT and DOT, are actually less powerful than the less expensive 8-bit machines when running 16-bit versions of much of the popular CP/M software, and will not realise their full potential until some real 16-bit software is available.

All the advertising about "powerful 16-bit microprocessors" seems to be so much hot air — if that power is used to run the same program more slowly in a new environment.

One last word. The frustration of using all those different keyboards was a real shock. The only common factor with all those QWERTY keyboards was the QWERTY itself.

Perhaps there is an agreement between manufacturers not to accept any standards in view of the rapidly changing technology. When such a standard is reached it will be very welcome to people who have to use different computers at their place of work.

I have spent an interesting month testing machines, and would like to thank those people and companies who provided the access to the computers tested. These include Archives, DCN, Microprocessor Systems, Myers, PAC and President. ☐

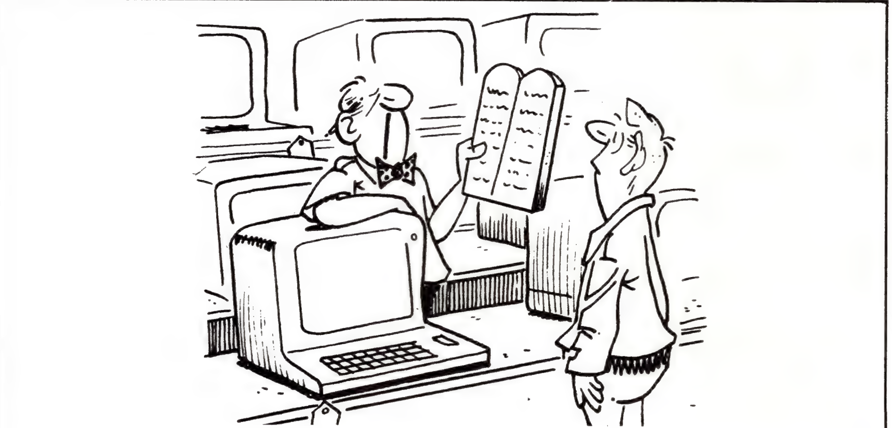

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TABLE OF TIMINGS AND CONFIGURATIONS FOR DBASE II BENCHMARK

COMPUTER	OPERATING SYSTEM	DRIVE "A"	DRIVE "B"	TIME 1 CREATE	TIME 2 INDEX	TIME 3 COPY	TIME 4 SORT	TIME 5 INDEX	TIME 6 FIND	TOTAL
Discovery	CP/M 2.2	60Mb	8in	2.07	2.37	3.15	5.07	5.36	6.17	24.19
Labtam	CP/M-86	8in	8in	2.20	2.47	3.10	4.04	4.40	5.26	25.51
Discovery	CP/M 2.2	8in	8in	2.26	3.13	3.58	5.33	6.23	7.05	27.58
Discovery	CP/M-86	60Mb	8in	2.11	2.44	3.20	6.10	6.56	7.40	27.81
Labtam	CP/M 2.2	8in	8in	3.05	3.44	4.06	5.25	6.22	7.17	29.9
Micromation	CP/M 2.2	10Mb	8in	2.26	2.53	3.50	6.29	7.25	8.11	29.94
Discovery	CP/M 2.2	8in	8in	2.17	3.04	3.46	6.48	7.29	8.17	30.6
Micromation 2	CP/M 2.2	8in	8in	2.03	2.46	3.52	7.05	8.01	8.39	31.46
Kaypro 10	CP/M 2.2	10Mb	5.25	2.20	2.57	3.46	8.07	8.55	10.10	34.95
ICL PC30	CP/M 2.2	10Mb	5.25	3.15	3.54	4.39	7.19	8.19	9.26	35.72
Labtam	CP/M 2.2	8in	5.25	3.04	3.44	4.45	7.33	8.52	9.53	36.31
IBM XT	MS-DOS 2	5Mb	5.25	4.20	4.57	5.26	7.33	8.33	10.37	40.06
Cromenco	CP/M 2.2	10Mb	W*	3.46	6.34	6.47	7.56	8.40	8.55	40.78
IBM PC with Ext.	MS-DOS 1.1	5Mb	5.25	4.21	4.58	5.47	8.07	9.10	10.51	41.94
Kaypro II	CP/M 2.2	5.25	5.25	3.34	4.44	5.55	9.03	10.24	11.20	43.80
IBM PC	MS-DOS 1.1	5.25	5.25	4.12	5.10	6.09	8.46	10.13	11.52	45.42
Dot	CP/M-86	3.25	3.25	4.03	5.19	6.47	9.52	11.25	12.47	48.93
IBM Displaywriter	CP/M 2.2	5.25	5.25	4.26	5.54	7.34	11.34	13.24	14.04	55.76
Sirius	CP/M-86	5.25	5.25	3.37	4.57	6.16	14.42	16.04	17.09	61.65
IBM PC	CP/M-86	5.25	5.25	4.07	5.31	7.08	14.52	16.23	17.46	64.76
NEC APC	CP/M-86	8in	8in	3.01	4.19	6.06	16.56	18.20	19.16	67.18
Olivetti	CP/M-86	5.25	5.25	5.05	6.44	9.00	18.08	19.51	21.26	79.34

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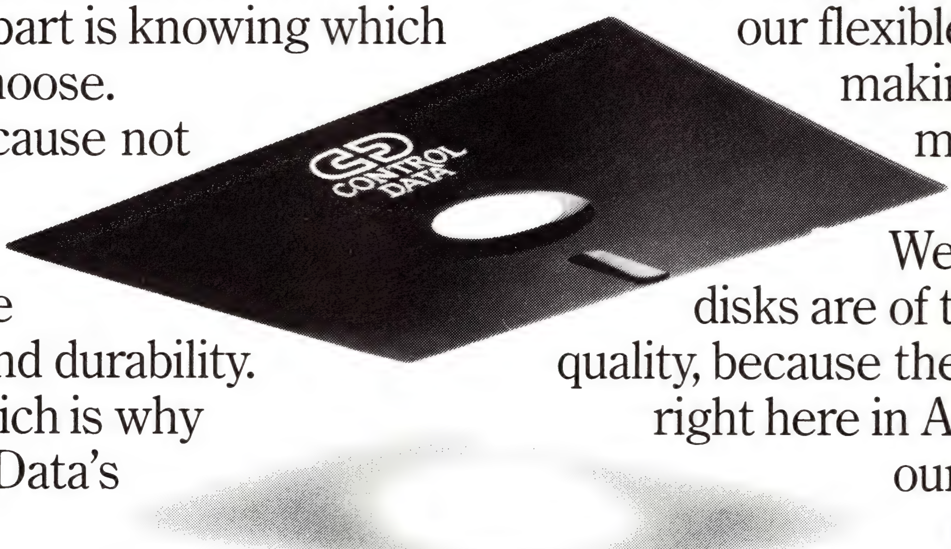

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Life behind the disk drives

A hacker's nightmare by Richard Anderson

ALL I did was stick my finger in the Drive A door — just one finger. I never dreamed it'd get stuck, and I wasn't even particularly concerned at the time. I didn't hurt or anything.

There was only this slight vibration and the faintest electrical tickle as it was tugging on me — but really nothing much.

The problem was not that my index finger wouldn't come out. The problem was that WordStar was refusing to do my will. Actually, it was refusing to do anything at all.

On the screen there was this bizarre line I'd never seen before that announced the arrival of ERROR E12 and informed me, to my acute embarrassment, that my disk was full.

Just to be insulting, the screen was also displaying a streak of @@@@@@@@@@@s, that odd character that lives above the 2 and means funny things to computers.

Of course it was all my fault. I want to get that clear from the start. I'd been driving a computer only long enough to get cocky about fast turns and stepping on the Quick button — that is, about a week.

My machine was a Morrow Micro Decision 2, and I was anxious to start making some microdecisions. I was even ready to take in a users' group meeting, through that sounded like a club for refugees from Needle Park who'd turned to Synanon.

I'd already overcome my fear fantasies that it was all a mistake. I'd never catch on how could anyone learn one of those things anyway — I'd got past that.

I was utterly and finally hooked, bound to the screen by some force that connected my neurons directly into the central processing unit.

I was learning like crazy, and I had all the fire of the new convert. My friends snickered that I'd become some sort of computer Moonie because eight hours a night had become short rations.

The first week I didn't write much, only fiddled around, tried out commands. They have me a certain sense of power over the machine, which was clearly much smarter than I.

Mostly, I ploughed through the rule book hoping to get WordStar happening. That was a pain, as all these computerdom manuals are execrably written. I did it, though, and I also figured out a few tricks with CP/M and Correct-It.

Then, one night, it suddenly took hold for me, and I felt like I'd got underneath Wordstar's centre of balance and flipped it to the ground.

It became so easy to whip words across the screen and stick them where they worked best.

A first, I was just going to have another practice session. I didn't even have a disk in Drive B, just WordStar booted up in A so I could try out some of the features of the Control-K menu, Block commands, which I hadn't exactly messed around with before.

> *It was exhilaration, I whipped words around and about. When a phrase wasn't right, I could fix it at once without stopping the flow of ideas . . .*

I opened a little file, named it Hate.Lst and wrote in some of the more despicable villains of this decade, including several rather prominent political figures and a couple of highly personal entries, just for my own satisfaction.

Then I moved large blocks of the hate list around, changing groups, putting them in different places, copying them, writing them into other files, deleting them.

That part was especially nice — sending my enemies off to electronic oblivion, entire squadrons at a crack. I also enjoyed holding down the Control and G keys together and thus feeding a steady stream of characters into the black hole, or rather into the green phosphorescent hole.

Only it all went so well that time, so fluidly, that I didn't have to keep looking stuff up in the rule book but could simply play across the screen and enjoy being the WordMarshall in command.

Ideas began coming to me, already expressed in their natural phraseology. It was a glimpse of further realms and the very reason I went to the monster in the first place, hoping for release to finish my novel about Tibetan Buddhism.

I knew I was flowing and didn't want to waste it on mere karmic retreads. One push of Control-K,D later, and I was opening a file for Chapter Ten, PADMA SAMBHAVA MEETS THE GREAT IMPOSTER.

It was exhilaration. I whipped words around and about. When a phrase wasn't right, I could fix it at once without that stopping the flow of ideas, for my fingers had suddenly become instinctive on the keyboard. I heard the wrathful deities roar and saw the peaceful deities caress me with their mysterious, beckoning smiles.

Pages scrolled away behind as a spirit carried me out of Milarepa's cave, up Mount Kailas and straight over the edge of my 5¼in floppy disk — which is when ERROR E12 appeared.

That broke the spell. In an instant, my writing momentum was gone as I was confronted with the need to get what I'd written saved from the transient state of RAM down to the quasi-permanent magnetic fields of a disk.

I hit the Escape button. ERROR E12 came right back. That was a bad omen.

I don't know exactly why I poked my left index finger through the drive door, some obscure attraction you see, though at the time it did seem to make a bit of sense. I believe my operating theory was to test whether the disk was properly seated. So I got stuck. Happens all the time, I'm sure. Anyway, I didn't let it bother me.

I'd been saving my work to disk as I went along, except for the final chapter. My first priority was to get it on disk — was quite committed to my windup title, ANNIHILATING MERE FLESH.

The obvious move was to slap a disk in Drive B and write to it. No soap. The cursor wouldn't move, and the bomber wouldn't respond to my commands, my sternest commands.

I tried Control-K,J looking to erase some files, even WordStar command files to free space for ANNIHILATING MERE FLESH.

Nothing, absolutely nothing, and it was taking forever to do all that with one hand.

My finger was by then pulled in as far

as the second knuckle. I reached over with my right hand to see if I could free my left. I tried to pry open the door, but then it happened. My right hand was stuck.

The disk took off, spinning, and in they both went, my left hand as far as the wrist before I got my elbows blocked against the desk. It still didn't hurt. I felt something like those vibrobeds they have in motels, on the edge of pleasant.

At that point I had to make a microdecision. I went with what was important, ignoring my hands for the moment to concentrate on turning pages in the WordStar manual with my tongue and holding it open so I could squint at Appendix B.

I knew I'd been writing molten gold and that if I didn't save the final chapter, it would be gone forever into never-never land. The only thing going for me was that the cursor was at the end of the file where I'd left off writing. The pull was getting vicious.

My left hand had been pulled in up to the elbow and my right to the wrist. I swung my left leg up on the disk and tried to hold off the power of the disk drive by bracing my foot against the drive door.

All right, I accept that that was a mistake, but you might have done the same. My foot was grabbed and pulled straight in. When my ankle barely slowed it down, I knew I couldn't hold out long against the drive.

There was the last possibility listed in Appendix B — Desperation move 4-c complete with the warning "use only with extreme caution." I thus dared to delete the input file of ANNIHILATING MERE FLESH itself, hoping thereby to vacate enough space to get my precious words out of the dreadful RAM.

Quite gingerly, I torqued my right elbow into an impossible position where it could mash down the Control key, untortunately doing something rather permanent to myself in the process, and then, in quck succession, I depressed the K and the J with my nose.

Before I could go further, disaster lashed over me. Drive A fired off. ANNIHILATING MERE FLESH atomised into mere garbage; scrambled letters chased each other crazily about the screen and then froze into nonsense as a horrible message appeared at the top of the screen: FATAL ERROR F29: SYSTEM FAILURE.

Drive A raged on. I tried to brace against it, but it was hopeless. I was up to my waist and going fast.

Drive A raged on. I tried to brace against it, but it was hopeless. I was up to my waist and going fast. I only had time to grab the WordStar manual with my teeth. With another great whirr, the machine swallowed me whole.

Life behind the screen has been rather quiet. I've been studying a lot, reading the WordStar manual and trying to figure this thing out from the inside.

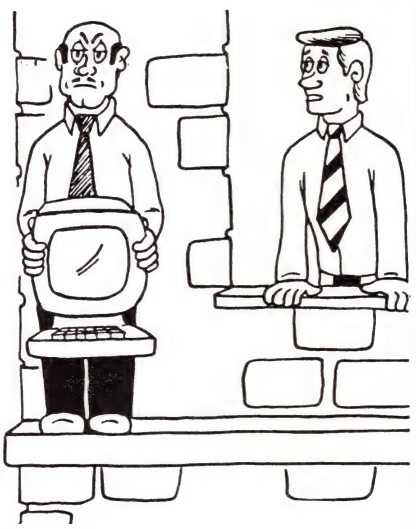
I made a thorough RAM search without finding the least trace of ANNIHILATING MERE FLESH. All that seems to be gone now.

My elbow gives me some trouble, but the worst thing is that there's almost no room to move round, and those damn drives are a menace. The way they start up out of nowhere down there, they could take a foot off. The only thing they're good for is trimming my nails.

The students here never have caught on to what was happening to their disks. I have had a lot of trouble with them because they try to boot up the machine when I'm busy using it, though they usually leave when I put a message like: WARNING! UNIT WILL EXPLODE IN THIRTY SECONDS. They're mostly staying away from my machine now.

I should be getting out soon. Shouldn't be too hard to do, though since I'm here, there are a couple more things I want to check out. And I have been thinking about starting another book, while I have this opportunity, you see — so don't get a rescue organised just yet. ☐

- *Richard Anderson lives in Berkeley, California.*



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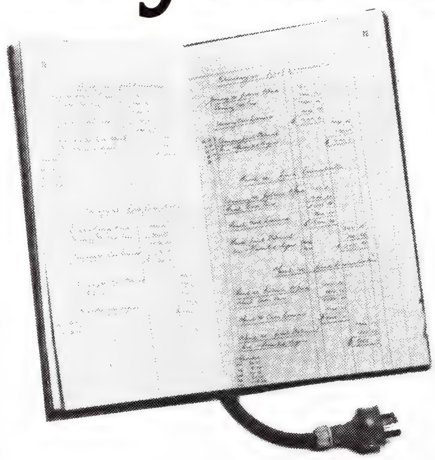

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Whether we know it or not, education is undergoing a revolution. Tony Smith talks to an academic with his finger on the pulse of the . . .

Clockwork classroom

As a child learns to talk and is big enough to hit a keyboard, it will start working with the computer in the home.

ACCORDING to Tom Stonier, professor of science and society at the University of Bradford in the UK, the first revolution in education since Victorian times will begin in the 1980s. The classroom, basically unchanged in this time, will be altered radically by the emergence of the home computer.

Prof Stonier, in Australia as a keynote speaker at 10ACC (he was also here for 9ACC) was speaking during Information Technology week at RMIT. During his talk, and in conversations with me, he explored a number of issues related to the use of computers for school and home based education.

Early education software began by using the VDU as a blackboard, he said. Most of that software was "put forward by programmers who may have gone as far as asking a teacher, what he was teaching these days," he said. Later, according to Prof Stonier, a second type of software began appearing.

Written by enthusiastic teachers, it was often good material "which, when the teacher was three feet away, didn't work". Today, we have some good software, albeit ad hoc. "You may have a terrific program on fractions but nothing to build knowledge on," Stonier said.

Prof Stonier's views correspond with a recent experience of mine. I was being shown the range of educational software on a popular micro. The demonstrator showed a disk for geographics and one for history and others for mathematics and English. Nowhere was substantial integration between the curriculum and the computer evident.

It was all, as Prof Stonier says, ad hoc.

But Prof Stonier sees his position changing rapidly because of the enormous market generated by the home computer. Groups comprising professional managers, finance people, educators, computer programmers and marketers, who will together begin to develop material in a systematic way, are forming. Over the next two years, Prof Stonier says an increasing volume of sophisticated educational material will appear.

"As a child learns to talk and is big enough to hit a keyboard, it will start working with the computer in the home," he said. The average, middle-class child of four will be able to read by the end of the decade, Prof Stonier says.

The traditional information skills of reading, writing and arithmetic will be learnt at the home, and the functions of school will be quite different. In the past century or two, education had moved from the home to the schoolroom, but would start to move back soon.

"School will be where you go to play and home is where you will go to learn," Prof Stonier said. He says we will continue to need school, but for teaching social skills, for field trips, experiments and sports.

But there are some undesirable trends in his vision. During the 1980s Prof Stonier sees an increasing gap between the information rich and poor. Every parent is insecure about their children's job prospects, he says.

They will grab at anything to enhance the possibility of their children getting jobs. Prof Stonier's example was that of a young girl humiliated by her teacher for appearing to be a fool in answering mathematical questions.

A computer with appropriate software and parental encouragement at home would allow the child to learn at her own pace with fun software and understandable concepts. This change in information flow would characterise much of society, Prof Stonier said.

Students may know more than their teachers. Middle class families will avail themselves of these opportunities first, followed quickly by working class families who see the success of these methods.

The real problem, Prof Stonier says, will be that group of underprivileged children. We may have to track children, not by IQ but by whether they have a home computer, he says. The child with one will have an enormous advantage.

Prof Stonier's views cover the wide spectrum of what he sees as the emerging information society ... views often more optimistic than other contemporary forecasters, providing society grabs the opportunities.

Prof Stonier is author of a book entitled *The Wealth of Information* published by Methuen, and is founder of a software house writing new-wave educational software. □

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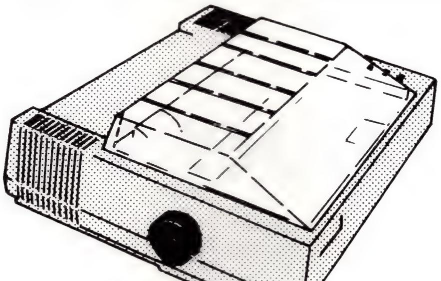

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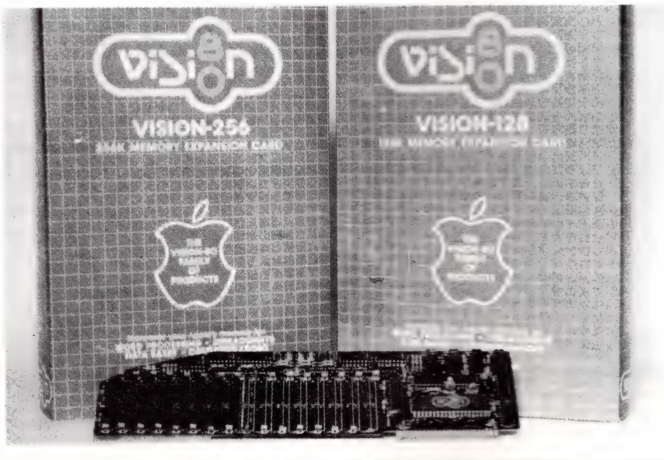

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University plans large-scale attack

With many US universities lapping up micro wizzardry, the University of New South Wales is setting out long-term goals. Norman Kemp reports.

ALTHOUGH many US universities are developing plans for large-scale personal computing on campuses — often encouraged by large gifts of microcomputers from companies such as IBM and Apple — Australian tertiary institutions have been much more subdued on the issue.

Eventually, a decision-maker had to come forward, and the University of New South Wales has emerged as the bold knight prepared to take up the challenge of clearing the campus of a motley electronic assortment, and being the standard-bearer for a new cause based around a strategically prepared, four-year plan. In essence, the university project appears straightforward, as it allows for selected brands of computers to be phased in carefully at appropriate intervals, and using the resources of its own highly skilled computer centres and staff experts to sort out some of the knottier problems in network communications.

The outcome, could lead to the purchase of up to 2000 personal computers to be used by professors and lecturers for research and student tutorials, by undergraduates to access library and database files and eliminating much of the current printed textbook style of teaching, and by the university's administration which will keep most of its records including student rolls, library inventories, staff payroll and a wide variety of records within the system.

The PCs which will be front-runners in this exercise have been decided on, and first deliveries have arrived at the university. They are the IBM PC and the NEC Advanced Personal Computer (APC).

In the interests of fair-play, an equal number of 50 of each brand has been scheduled to form the first phase of the project. The decision to buy both brands was taken after lengthy consultations with staff and professors at the university's computing centre and within the academic departments. Predictably, the more conservative elements plumped for IBM: the maverick "computernics"

One Harper's bazaar

STEADY sales of personal computers to business customers have enabled Sydney retailer Harry Harper, managing director of Zofarry Enterprises to move from smaller premises to a 100 square metre showroom and increase staff from three to ten within 18 months.

Now operating from the corner of Burwood and Parramatta Roads, Burwood, one of Sydney's largest inner-western suburbs, Harper has established a complete service centre with two staffers handling Apple and IBM PCs, two more staffers for software development and support and a sales force of three together with administration personnel. Zofarry — a combination of the first name of his Polish-born wife, Zophia, and Harry — opened as a retail computer store in July, 1981.

Previously, Harper and an associate Ken Thompson, now developing educational software independently, devised an 80-column video add-on card for Apple II computers. Sold as Vision 80, and still in production, it was one of the first Australian products to provide Apple users with practical computer applications such as word processing and business functions.

Although the Australian market has not developed the huge bulk-buying practices of Americans, Harper does not feel disappointed. He has a number of large companies on his books, with from five to 20 Apple and IBM machines, using them experimentally while they study their capabilities. Organisations contemplating micros should not leave all the decisions to the DP manager, although this is occurring in many instances, Harper says.

The role of micros in a company should be allocated to a specific executive within a group who can co-ordinate with middle management who want small computers for particular purposes, and the DP department which may worry about connecting large numbers of personal machines to complicated databases and expensive software. Some Australian companies have recognised this need, but many are still locked into depending on the traditional DP decision area to select microcomputers for purposes which they do not fully understand, he says.

Areas of most interest and benefit to middle managers are word processing, communications, database and electronic spreadsheets, Harper says.

"Since the introduction of microcomputers, many new and exciting areas have been explored and developed by this middle management group, placing a greater dependency upon their own increased productvity to ensure the greatest possible levels of company profitability and personal satisfaction," he says, adding that marketplace needs are changing.

The Apple II design has aged well, but there is a need for machines of larger configuration. Although the later 16-bit microprocesors are said to be faster and will have more applications written for them, Harper does not discount the continuing demand for 8-bit micros, which have been the backbone of the business market. Hardware prices, together with software currently available for them, will ensure there are customers for some time yet, he says. ☐

wanted something a little less formal and with what they say has more exciting potential, so they voted for Personal Computer of the Year, the APC. The first delivery of four of each, on the same day, was taken in September and the remainder will arrive over the next two or three months, to be used mainly for staff familiarisation and development of teaching methods, and for studying the extremely complex process of establishing the campus network.

The IBMs are being allocated to various schools for evaluation, among them accountancy and electrical engineering, and the NEC APCs will go to library and administration applications, with one to the school of civil engineering.

The make of computer has not been the sole radical decision; the university has also defined the path it intends to take for future computer requirements, and these fundamentally will be based on latest technology 16 or 32-bit machines and software as they become available.

The heterogeneous collection of small 8-bit computers, which include a number of Apples and some lookalikes, as well as more than 200 terminals in the computer laboratories and other locations will be replaced by personal computers providing more flexible user facilities. The 14 batch stations at the university computering services centre which has a substantial PDP-11 population including models from the PDP-11/40 to 11/70 as front ends to the larger processors will be rationalised.

As the working parts of the system come together, the personal computers will be phased into the university's major computing resources which include two Digital Equipment VAX 11/750 and one VAX 11/780 processors used by the electrical, mechanical engineering and other faculties, a powerful but slightly dated Cyber 72 which will be upgarded for scientific applications, and a Facom 180M which handles much of the administrative work, and also will be upgraded with an improved interactive database. Although special software will be required for the diverse network communications, and the university expects either to have this written internally to Digital VT100 standards or to commission outside, third-party houses for other purposes, the application packages are conventioal.

The principal ones will include Wordstar and Spellbinder word processing systems, Lotus 1-2-3 and Context MBA financial spreadsheets and dBase II database manager. As with the hardware, all software packages will be up for scrutiny when new products come on the market.

The initial pattern for the PC also has been set. The MS-DOS operating system has been selected as standard wherever feasible, and the PC will be configured to a minimum of 128K-bytes of internal memory. Maximum floppy disk and hard-disk densities will be used in the various applications.

Although the university will not disclose the project's estimated cost, it claims to have sufficient money in hand to begin, and expects more help through educational grants and faculty budgetting to ensure its completion. Among benefits will be a greater awareness of computer handling both by professorial and lecturing staff, and by students. ☐

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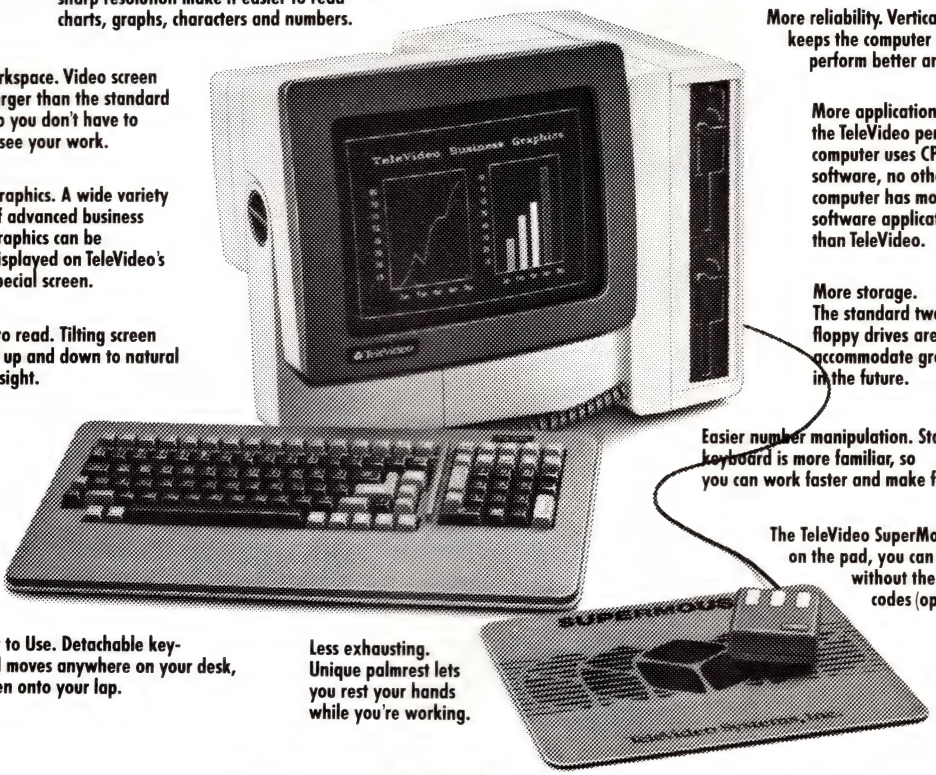

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What are you getting the kids for Christmas?

The increasing fashionability of personal computers has produced much greater public awareness than ever before. This month, Tony Smith looks at many of the specialised home computers you will be able to chose as Christmas presents.

BEFORE the end of this year, at least 20,000 Australian homes will have one of the new range of home computers exploding on to the market. These computers will be bought for many reasons, but most with some intention of educating the kids or parents or both. Despite such noble excuses, they will be used mainly to play games, at least initially.

Only two years ago, the industry saw the first economically significant pre-Christmas peak, heavily centred on the ubiquitous Apple II. Last year, it was Commodore's VIC-20 which really powered the December boom as it raced to a million sales worldwide in about as many months as it had taken Apple years.

This year, Commodore is still hot to dominate with the tiring VIC and its replacement, the 64, but with serious challenges coming from the East, the UK and even a little town halfway to Newcastle, NSW.

The emerging home market has more common elements that it has distinguishing features by which to separate the 15 or more contenders. Every home computer has in common:

- An 8-bit microprocessor chip.
- Operating system in read only memory (ROM).

(Continued on page 49)

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(Continued from page 47)

- Multicolor display with dot-addressable graphics which can use an ordinary color television set.
- Interface to a cassette tape for program storage.
- Some form of interface to optional printer.
- Some sound or music-generation facility.
- A plastic case which is minimally bigger than the alpha keyboard it has to carry.

Most of the distinguishing features are just quantitative variations in various components which are generally reflected in the price, including: memory size, screen resolution, the number of independent "voices" contributing to sound sythesis, and the size of the keys. Some do use full typewriter keys but the others vary from pocket calcualtor style keys up, and in the US are referred to as "chiclet" by comparison to a popular confectionery.

Other variables such as the availability of disk drives can push the total price outside the broad home market. The key single variable which effects the style of use of a home computer is the availability or otherwise of plug-ROM cartridges containing games and other software.

The absence of such cartridge facilities at least forces the user to take a small step into the practical hassles of computing by learning to load programs from cassette tapes. In contrast, ROM cartridges are a great step forward in user friendliness, greatly complicate any attempts at swapping software (the suppliers call it piracy), and make it common for the new home computer owner to never venture past the easily accessed pre-programmed games.

The newest feature to be introduced on some, but not others, of the home contenders is graphic sprites, small images which can be moved and manipulated independently against a full screen graphic background. Unfortunately, the availability of sprites closely correlates with the availability of ROM cartridges, so they will be more often used within pre-programmed software than by the efforts of individual Christmas shoppers, except those who also get the emerging key educational language Logo.

Apple has been omitted from the survey because its pricing policy has left it in the business personal computer market, a role which it also fills quite well. Anyone really serious about getting into computing at home will not look at any of the so-called home computers, but will go straight to Apple to get a really useful computer.

The Amust Executive 816 — a full CP/M machine in a briefcase.

The only contenders against the Apple II for the serious home user are its imitators Fox and Medfly, and the third popular school computer, alongside Apple and Microbee, the BBC.

If education is the real reason for buying a computer for Christmas then alternatives such as courses, summer camps or hours of public access computing in libraries or commercial operations may provide a more valuable alternative. □

Commodore has it all neatly gift-wrapped

By Tony Smith

THE number of US suppliers to the home computer market is disproportionately low, emphasising the feeling that Commodore has got it tied up as well as any US company could.

HOW THEY RATE
— PAGE 50 —

It only has to contend with the seemingly permanent contenders for second place, Atari and Tandy, plus electronics giant Texas instruments continuing to subsidise consumers in markets it does not understand.

Commodore has got its mass production act together so well for these low-end machines that its pricing reflects only marketing considerations without any need to think about the cost of production. Even the long-rumoured lentry of the giant IBM and trend-setter Apple to the home market would do little more than frighten away some of Commodore's would-be competitors.

That is not to say that Commodore's offerings are in any way superior to the rest. The VIC was only really valid last year, and the 64 certain has not

(Continued on page 51)

HOW THE HOME COMPUTERS COMPARE

MAKE/MODEL	PROC	RAM	ROM	COLORS	TEXT	GRAPHICS	MASS STORAGE	INTERFACE	CARTRIDGE	SPRITES	VOICES	KEYBOARD	PRICE
Atari 600XL	6502	16-64	24	256	40 x 24	320 x 192	cassette, diskette	serial	yes	4	4	full	$399
Atari 800XL	6502	64	24	256	40 x 24	320 x 192	cassette, diskette	serial	yes	4	4	full	$
Commodore64	6510	64	20	16	40 x 25	320 x 200	cassette	serial, parallel	yes	8	3	full	$495
Comx 35	1802	35-67	16	8	40 x 24	256 x 192	cassette	serial, parallel	no	-	3	chiclet	$299
Dick Smith	Z80	8-24	16	8	32 x 16	128 x 84	cassette	parallel	no	-	1	chiclet	$199
Electron	6502	32	32	16	80 x 32	640 x 256	cassette	proprietry	no	-	4	full	$500
Microbee	Z80	16-60	28	26 opt	80 x 24	512 x 256	cassette	serial, parallel	no	-	1	full	$499
Micro Prof	6502	64	20	6	40 x 24	256 x 192	cassette	parallel	no	-	1	chiclet	$
Mitsui M5	Z80	4-32	8	16	40 x 24	256 x 192	cassette	parallel	yes	32	3	chiclet	$
Oric 1	6502	16-64	16	8	40 x 28	240 x 200	cassette, diskette	parallel	no	-	3	chiclet	$
Sega SC3000	Z80	16-48	32	16	38 x 24	256 x 192	cassette, diskette	printer	yes	32	3	chiclet	$
Sinclair	Z80	16-48	16	8	40 x 24	200 x 192	cassette	printer	no	-	1	chiclet	$299
Spectravideo	Z80	16-128	32-96	16	80 x 24	256 x 192	cassette, diskette	serial, parallel	yes	32	3	chiclet	$499
Tandy Color	Z80	4-16	8-16	9	32 x 16	128 x 64	cassette, diskette	parallel	no	-	1	chiclet	$499
TI 99/4A	9900	16-52	26	16	32 x 24	256 x 192	cassette	serial	yes	32	3	full	$499
VIC 20	6502	5-32	20	16	22 x 20	176 x 160	cassette	serial, parallel	yes	-	1	full	$299

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(Continued from page 49)

up to its promise to be the last 8-bit computer, being closer to a list of things to be improved on by anyone serious about building the definitive 8-bit machine.

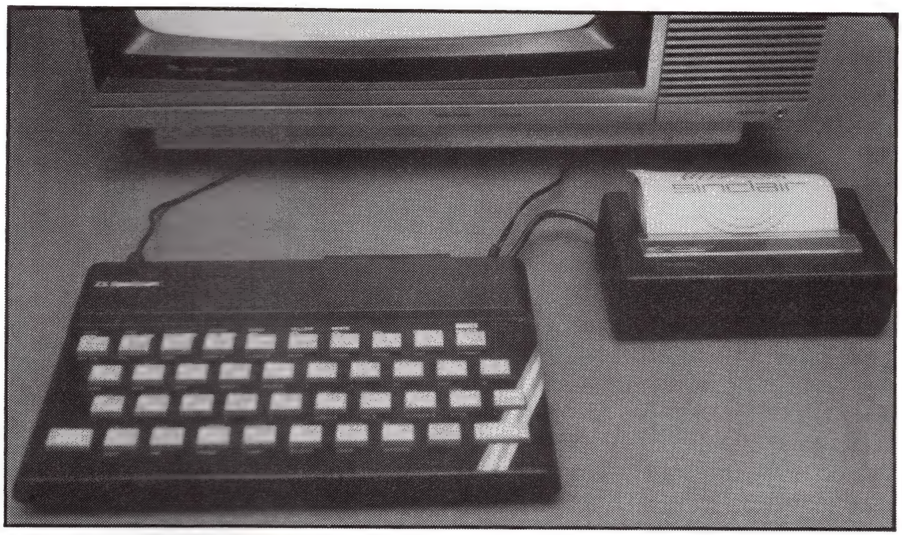
But it can, and does, deliver in huge quantities, the first name of the game.

Across the Atlantic, that entrepreneurial genius Sir Clive Sinclair is up to his third mass-produced introduction to computers, the Spectrum, which, through its marketing arrangements impact on the US market. Spectrum UK computer to make a signficant impact on the US market. SPectrum was relatively late getting to Australia, while its distributor Barson Computers haggled successfully over terms and conditions.

As it is closer to the mainstream of home computing than its predecessors, ZX80 and ZX81, Spectrum is definitely a valid product in the present market.

The makers of the UK government-funded BBC school computer have spun off the Electron in an attempt to squeeze most BBC features into the constraints of the home market.

Electron and the third UK contender Oric are both quite substantial offerings with a reasonably assured base of domestic sales on which to build their international sorties. But the big challenge to Commodore is instead emerging across the Pacific. A huge home market for that class of machine has enabled all the big Japanese companies to put something on the market. The key to the success of such computers in Australia is the local distributor.



ZX Spectrum . . . a valid product in the present market.

The recently and spectacularly launched combination of successful local leisure industry supplier John Sands and Japanese arcade game giant Seag stands as the front-runner of the Eastern offerings this Australian summer. Dick Smith's bottom-of-the market VZ-200 is also likely to win some market share.

But the real Hong Kong challenge will come from video game giant Spectravideo, a company which has established its identity in competition with Atari, and which has brought one of the most powerful home computers,

(Continued on page 52)

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APC 7/83

(Continued from page 51)

the SV-318, to Australia. Irrespective of the high-powered international pushes and huge market share stakes, the computer which must at worst run second to Commodore in the Australian home market is the locally designed and manufactured Microbee.

It may be an older design than any of the imported contenders, but during that time it has built up a local hobbyist following and collection of associated products, especially software, reminiscent only of the mighty Apple II. Given anything like the advertising budget and production capacity to match the importers, there is little doubt Microbee could make a very handy killing this Christmas.

If you still have not made your choice when Microbee's stocks run low, possibly the best move would be to look around for a good deal. Already the Comx 35 from Hong Kong is on special until mid-November, with any buyer of a Comx plus two program cassette tapes gets a data cassette recorder and a third program tape thrown in.

Whether such specials run closer to Christmas will depend on some fine balancing of supply and demand by the many importers. The real bargain hunter will, as usual, wait until January for the stock clear-outs forced by the rash of announcements of new models which have been hidden away while another Christmas is properly commercialised.

If you are stuck in the price range and cannot buy a Microbee, it is worth remembering that the well-established Ataris and even the VIC-20 have much more software available now than have the newer offerings

The Oric, a substantial offering from the UK.

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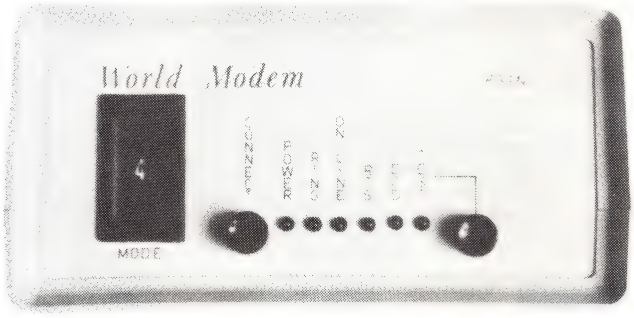

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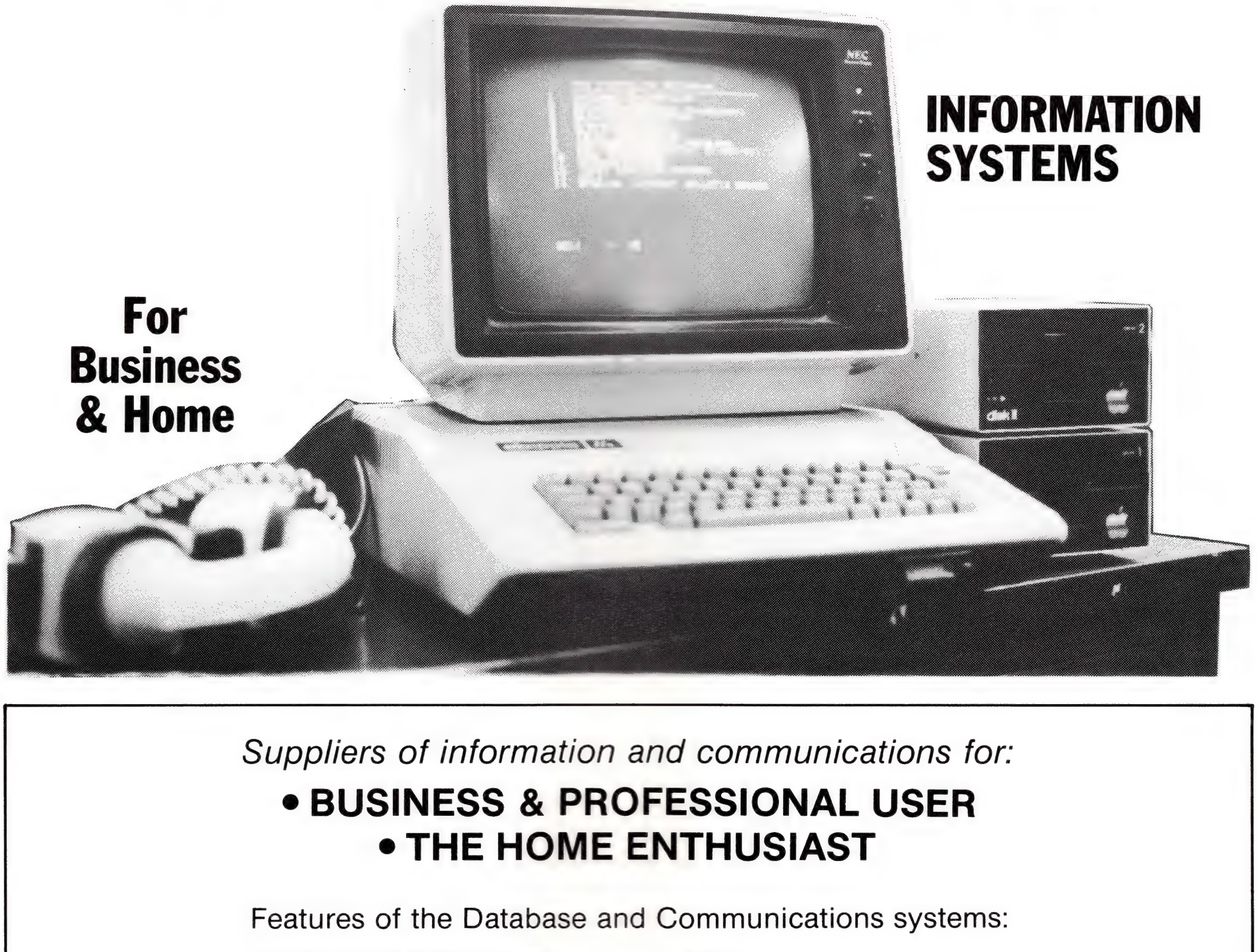

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Roger Keating is a games programmer with a cult following. As Ian Webster outlines here, this wargamer is now well-established and . . .

Reaching for the stars

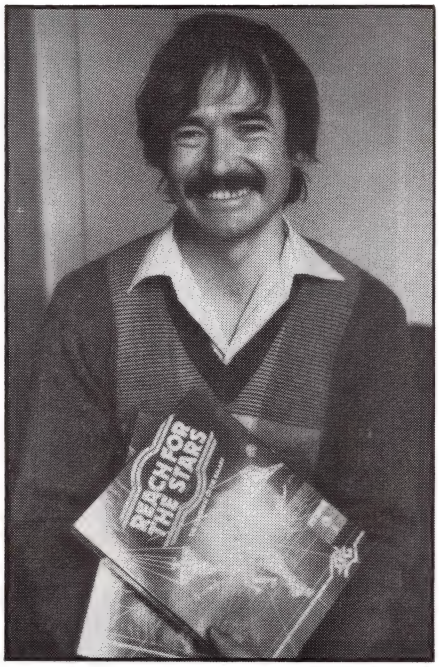
THE wargaming community regards Australian computer-game designer Roger Keating as one of the best programmers on the planet. He has built his reputation with the release of four computer wargames for the Apple microcomputer.

These games have achieved moderate market success, and have come to be regarded as classics of the genre by wargame afficionados. Keating's first introducton to computers was as a mathematics teacher in New Zealand in the mid 1970's.

After moving to Australia to teach at Sydney private school, Cranbrook, he encountered his first Apple microcomputer in Rudi Hoess' Clarence Street Computerland, a haven for many who have gone on to create the Sydney microcomputer industry. Keating managed Cranbrook's computer-education program for several years, learning about the Apple environment and played a leading role by founding the NSW Apple Users' Group and the NSW Computer Education Group.

Involved in wargaming since the early 60s, he began experimenting with computer-based games. In 1980, he produced a game called *Conflict,* which he intended giving to the NSW Apple Users' Group. After being advised that the game had commercial potential, he published the program himself and sent copies to 15 US software distributors. A new company, Strategic Simulations Inc, specialising in strategy games, agreed to publish his program. The program was published as *Computer Conflict* in the US, and achieved respectable sales. Keating says the most important result of his program was that it established his name in the game-designing community.

The game market in 1980 was obsessed with arcade-style games, but with encouragement from SSI, which was trying to establish a market for strategy games, decided to write another game that would correct all of the conceptual problems in *Conflict.*



Roger Keating . . . computers as opponents are finished.

Keating's second game *Operation Apocalypse* published in 1981, was written in the US.

He says it was a 96K Basic program. When he became convinced it was impossible to write intelligent strategy games in Basic, he turned to Assembly language. This game, which sealed his reputation as a serious game designer, taught him how to handle both sides in a strategy game and to develop the intelligence routines that became an important part of later games.

After trying to develop two other games in 1981, he finally produced *Southern Command,* a game based on the October 1973 conflict between Israel and Egypt. This game, regarded as a classic of the genre, and still selling steadily, uses an innovative scrolling screen technique in an attempt to simulate the use of the large playing board that most strategy wargames use.

Keating says this game marked the end of his training as a game designer. He turned to designing the ultimate wargame. The result was *Germany* 1985, the first of four scenarios set in potential world trouble spots.

He describes this highly intelligent, complex wargame as the culmination of his efforts. The problem with the game was that the computer was almost impossible to beat. Enthusiasts loved it and most people hated it, he says.

Despite the moderate success of his games in the US, his royalties did not amount to much. Keating says that few game designers make large amounts of money, with the usual royalty arrangement returning 20 per cent of the program's wholesale dealer price.

Now an established member of the computer game design community, he has decided to form his own company, Strategic Studies Group, and to establish a development team, that would help him avoid the complex unplayability of *Germany.1985* Development teams are essential if the game is to work, Keating says. His game testers, who used only to be involved after a game had been completed, now are involved right at the start of the design, before a line of code is written. *Reach for the Stars,* his new game, a galactic space adventure, developed with Ian Trout, has introduced a new concept that supports interactive game play.

Keating says the concept of the computer as an opponent is finished, and people want to play games where they interact with people. The computer supports the game environment and offers assistance to the players, but does not appear as a monolithic opponent. Keating is pushing towards the development of real-time networked games, and says that in *Reach for the Stars,* which is played with four people, any or all of who can be played by the computer, it is often difficult to decide which of the players is the computer.

It isn't important, Keating says, whether your allies or opponents are human or computer, the important aspects of the game is the establishment of the subtle complexity that makes all games interesting.

Roger Keating's strategy games are available from Apple II and Commodore 64 dealers. □

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'Business is war'

Commodore International chief executive Jack Tramiel has driven his company to the top, achieving the largest installed product base of any computer company. Susan Carlson visited him at the battle front.

TIME magazine called him the Howard Hughes of Computerdom. Others have dubbed him a tough street fighter in executive's clothing. He describes himself as a commanding general leading his army to victory.

Whoever he is, Jack Tramiel, chief executive of Commodore International, appears to many in the computer industry to be an enigma.

Born in Poland in 1928, Tramiel was sent to Auschwitz during World War II. After being freed by Soviet forces, Tramiel went to work for the US Army, later emigrating to the US and Canda.

In Canada in 1955, he founded Commodore Business Machines, which manufactured typewriters and adding machines. In search of cheaper production facilities, he went to Japan in the 1960s, where he was introduced to his first electronic calculator — and to a lifelong love affair with Japanese business principles.

Since then, Tramiel has demonstrated an amazing aptitude for manufacturing consumer electronic devices in enormous volumes and at tremendous cost efficiencies. Under his stewardship, Commodore's pocket calculators dwindled in price from over $1000 to pocket change.

Micro: How do you expect the home computer market to look in 1986? Should we expect the market to become saturated?

Tramiel: I have been hearing about saturation since I've been in business, and I've been in business for 25 years. Every product I have ever been involved with, I have been asked the same question about saturation, even going back to products like adding machines, bookkeeping machines, and calculators.

In 1968, we were selling calculators for as much as $1495. By 1978 we sold the same calculator with the same features for $9.95. A lot of people felt the market was ruined, saturated. I felt I had done a service to the public by bringing the price down to that level.

At the peak in 1975, there were 130 million calculators sold. To this day, there are still 70 million replacement calculators being sold each year, except all of the American companies gave up the business. We left it to the Japanese only.

I believe that in 1986 there will be 50 million computers sold. The breakdown will be 20 per cent business computers, 30 per cent personal and 50 per cent home computers. The average home computer will range from $100 to $300. From $300 to $600 you will have personal computers, and from $600 to $1000 will be business computers.

But the computers themselves will have many more features than we have in computers today — more memory, built-in storage devices, built-in modems, and even built-in telephones in certain products. The majority of computers will have speech input and output.

> *'A lot of people felt the market was ruined; I felt I had done a service to the public.'*

Micro: Will Commodore be an important player in the 1986 business market?

Tramiel: No. Commodore will be a player, but not a big player.

Micro: Why not?

Tramiel: Because there are people in the business market who have much more experience than we do. They have much greater resources, and much bigger names than we do, like IBM, DEC etc. We are still a small company compared with them.

Micro: What are your goals for your software division?

Tramiel: We believe that software is going to be a very important part of our company. I believe computers are very similar to razors and razor blades. The most important thing is that every home and office should use a Commodore razor. Then we should deliver blades to them and make money on the blades.

Micro: Do you plan to encourage the development of outside software, or will you only publish your own?

Tramiel: We will support internal, external, and third-party software and we will do anything we can to get the best software in the industry. At this company, we believe that the end user is our boss, and we serve him in the best way we know how. That has been our strategy for the past 25 years.

Micro: Commodore has shaken the home computer market with very aggressive pricing policies. Some critics maintain that it has hurt the marketplace.

Tramiel: What is a company to do? Should we not be cost-effective? The majority of companies in the world, excluding Japan, react to prices when they have to. I believe you should react when you can, not when you have to.

So the more efficiency we put into the product, and the better yield we get from the learning curve, we share it immediately with the end user. The majority of companies react to prices. We don't. Whenever we can, we reduce them. Immmediately.

So actually, we are a very, very simple company with a very simple philosophy. We don't believe in greed. We believe in sharing with the end user the efficiencies that we create.

Micro: Do you anticipate that personal computer makers will lower their prices to compete with Commodore for the same markets?

Tramiel: I always anticipate, because I always believe that other people are as smart as I am, so I'm always on the alert every hour of the day. I never take anything for granted. We have a saying at this company: We believe that business is war, and we are here to win. Any one of our competitors is one of our enemies. We take them very seriously.

Micro: Is there a role for both the dealer and the mass merchandiser in distributing Commodore's products?

Tramiel: Yes. I can talk about dealers because I have been a dealer. I had my first office machine store on Fordham Road in the Bronx, across from Fordham University. I know exactly where the dealer plays a role in selling equipment and where the mass marketer plays a role.

Micro: Many dealers are not happy with Commodore's pricing and marketing strategies. How can a dealer plan his business so that he can make a profit selling Commodore's products?

Tramiel: Speaking as a dealer, I would be extremely pleased if mass marketers carried my product because there would be that many more razors out there that can use blades which the mass marketer doesn't have the capability to service.

Micro: Do you think you're the only chief executive officer in the industry who regards business as war?

Tramiel: Definitely not. I believe the whole Japanese economy thinks that this is a war. As far as business goes, I went to the "university in Japan".

Micro: So you see yourself as a commanding general.

Tramiel: I see myself as a businessman who tries to be where the action is. I look at business like sex: I like to touch it, I like to be there, I like to feel it. I don't like to look at it on a screen. I like to be right there, directing traffic myself. I believe that's the only way. It's an old-fashioned way. It may be the "street" way, but it works.

Micro: Commodore's executive ranks appear to be in constant turmoil. Why do you keep hiring presidents?

Tramiel: Because I'm trying to get one. There is absolutely no question that lately we have more people returning to Commodore than we have people leaving Commodore. People who left, or people I've fired over the yeares, have learnt more about the business and more about my style, and I have learnt more about their style.

So we both have mellowed, we both have learnt. People now have come back and they're now very good members of the company.

Micro: What religion is it that employees must subscribe to?

Tramiel: We are workaholics. We believe we must be involved, deeply involved, in everything we do. We believe we must communicate from the top to the bottom and from the bottom to the top on every subject. And we believe in internationalism.

A lot of people do not understand our philosophy. We do not understand our philosophy. We have a lot of people, especially in North America, who believe very much in self-image and individualism. They do not work for the company, they believe the company should work for them. That's their philosophy.

Micro: You adhere, then, to the Japanese work ethic?

Tramiel: Yes, very much. We work for the company. The company is the important thing. What's good for the company is good for us.

Micro: And is that philosophy beneficial to your employees?

Tramiel: Very. We have graduated more millionaires from this company than many, many other companies in our field. □

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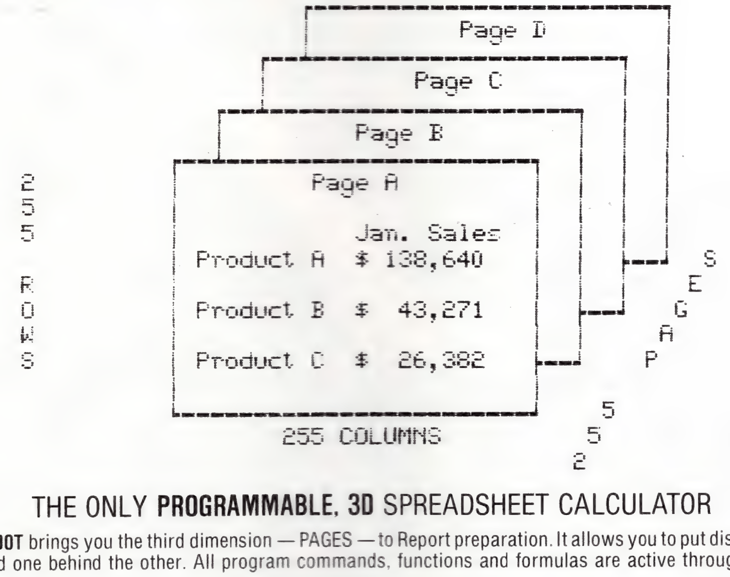

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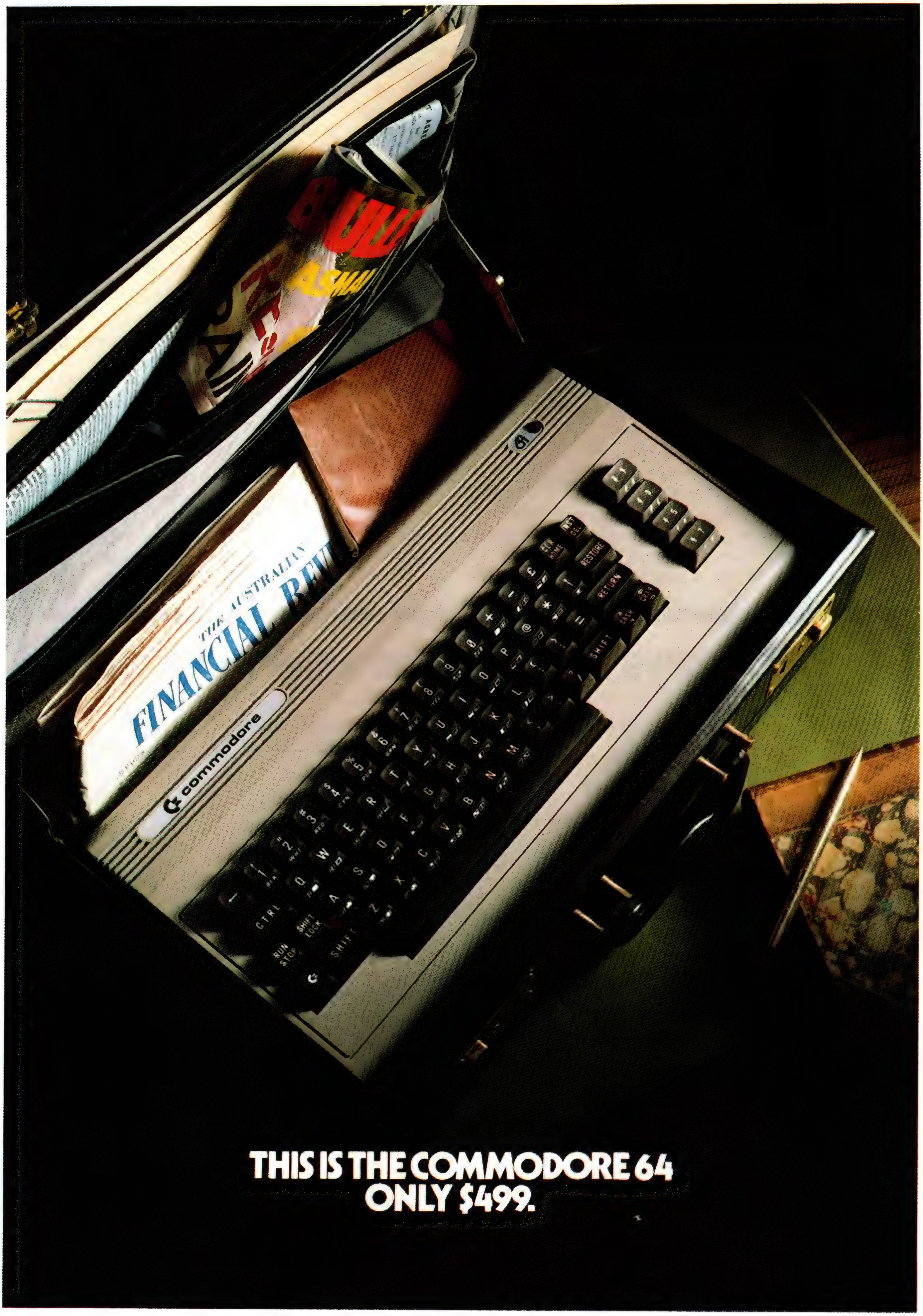

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Dynamic Davis

Personal enthusiasm can be the hallmark of survival in the micro retail jungle. Ian Webster reports on one such enthusiast, Roger Davis.

THE Australian microcomputer industry is about seven years old. Many early participants came from the office equipment or electronics business with the enthusiasts of the late 1970s who were attracted to microcomputers.

Only recently have the professionals from the mini-mainframe companies and the Pitt and Collins Street computer-' ists become involved.

Roger Davis was a business equipment dealer who became an enthusiast, then as national sales manager for Commodore, took that company to total domination of the bottom end of the Australian computer market with an installed based five times larger than any other supplier's in Australia. Having recently left Commodore to establish a new venture, he discussed Commodore in Australia and consumer marketing.

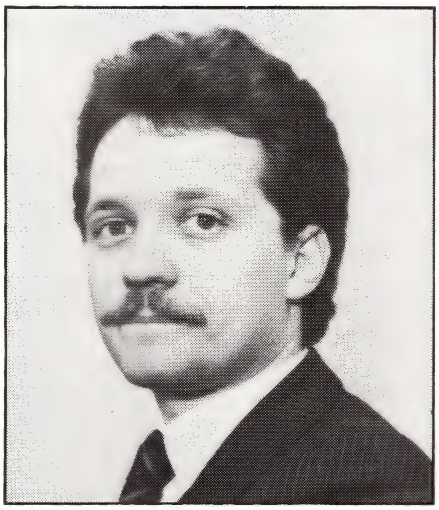
The first microcomputer Roger Davis saw was the Pet 2001, in an *Electronics Australia* advertisement. He was attracted to the idea of microcomputers, and bought one from a Sydney dealer. It arrived complete with four pages of photocopied documentation. Davis began selling them through his Perth business equipment store.

Hanimex acquired the Commodore agency in 1978, and so he bought computers from Nigel Shepard, later to become Commodore managing director, and sold them to enthusiasts and Murdoch University. Having become an enthusiast, Davis began the WACUG user group, learning to program, scavenging overseas magazines for new software releases and generally neglecting his business equipment shop.

Steven Lee, product manager at Hanimex for Commodore, showed him his first disk drive at the 1980 CES show in Perth. He says he wrangled the drive, which was the first Commodore drive in Australia, and began writing business software packages.

By the beginning of 1980 Davis' business was dependent on Commodore computers. He heard a rumor that Hanimex was about to lose the Commodore agency and tracked down Nigel Shepard to learn that Commodore was going to establish its own Australian operation.

He said he was interested in working for Commodore if it was serious about establishing a national distribution network, and in September 1980, left Perth for Sydney to establish Commodore with Nigel Shepard, Steven Lee and Colin Long from Hanimex who all had left Hanimex, taking Commodore with them.


Roger Davis . . . advertising is the key.

The company was established as the Commodore Information Centre because the name Commodore Business Machines was difficult to register and the UK operation had promoted the concept of information centres. They began selling CBM 3000s, 4000s and the first 80-column machines, the 8000 series. A network of 60 dealers was established.

Most are still around today.

The new team began developing the market software packages and support material for the computers. The first time Davis saw a VIC-20 was when a Japanese visitor to the November 1980 computer show in Melbourne showed him a picture of one.

It was released finally in Australia in March last year.

Until then, there had been no thought of a consumer market for computers in Australia. Apart from the business market, most sales were to enthusiasts or eduction. Davis says Commodore began being pressured by some of the large department stores early last year, when the VIC-20 became available, but that Commodore was reluctant to give them the machine because of the support problems they thought were inherent.

Nigel Shephard decided to use specialised retail outlets that could provide their own support and the VIC-20 was supplied to Dick Smith, who played an important part in establishing the product, using his advertising and distribution muscle.

The strategy developed for the VIC-20 was based on pricing the machine to compete with video game machines, and then using a US-developed advertising campaign that asked "why buy a games machine when you can buy a real computer for the same price.". The rest is history.

On November 21 last year, after extensive negotiations with the one independent video distribution company, Video Classics, to carry the VIC-20 in all their outlets, Commodore reduced the price of the machine to $299 and launched a $400,000 television campaign. Commodore sold 10,000 computers in six weeks and has not looked back since.

Davis says the key to consumer computing marketing is advertising and distribution. Once you start advertising a consumer product to the public, they must be able to get it easily. All of the major department stores became interested, and the Commodore stand at the PC Show in March often resembled a buyers' convention as they haggled for supplies of the VIC-20.

Once Myers and Guyatts in Melbourne accepted the VIC-20 all others joined in, Davis says.

The Commodore 64 arrived in May this year and has now moved out to the market. Davis says delears were given the first sales of the 64 because they have the capacity to support the consumer when there is little software for the machine.

Once the market volume improves and the price falls along with dealer margins, then it is offered to the larger accounts. He feels specialist dealers can compete against the large retailers by offering superior support and service. Large retailers see it as a cash and carry business, he says.

The incredible success of Commodore is based on its vertical integration and its capacity to control price. Davis expects the C64 to end up at a similar price to the VIC-20, although he says Commodore US makes a daily evaluation of the future of the VIC and expects it to cease production next year.

Commodore has been greatly affected by the turn-around in business, going from a 90/10 mixture of business systems/consumer products to a 20/80 mix. Davis says he thinks Commodore is so successful with its consumer products that it has lost its enthusiasm for building business systems, although Commodore boss Jack Trameil will keep building business systems for the next 20 years, even if they lose money.

The biggest threat to the retail computer business is discounting, Davis says. He recounts a recent visit to a department store in the US where business systems were stacked up and sold at incredible discounts with no support at all. Support costs, must be allowed to be built into the price of a system, says Davis, who regards the quality of the users' experiences with their computers as essential for the industry.

Roger Davis left Commodore in July to form a startup, consumer electronic high-tech company called Computer Classics as part of Video Classics. He says it is hard to gain satisfaction from a situation of 10 to 20 per cent growth when you are used to 200 to 300 per cent growth.

Computer Classics will support computer retailing activities of Video Classics dealers and also branch out into software packaging and production as well as other emerging areas of consumer electronics.

Davis' greatest concern is for computer dealers, who he says are not doing well at present, confirming a widespread feeling in the industry.

He doesn't expect all distributors will be able to survive the next 12 months ... and that will cause a shakeout of all levels of the industry. □

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Comparison Chart

	SPECTRAVIDEO SV 328	SPECTRAVIDEO SV 318	APPLE II E	ATARI 800	COMMODORE 64	BBC MODEL B	DRAGON 32	SPECTRUM
COMPUTING POWER FEATURES								
BUILT-IN ROM	**48K**	**32K**	16K	10K	20K	16K	16K	16K
EXPANDABLE TO	**96K**	**96K**	N/A	42K	N/A	64K	N/A	N/A
BUILT-IN EXTENDED MICROSOFT® BASIC	**YES**	**YES**	YES	ADDITIONAL COST	NO	NO	YES	NO
BUILT-IN RAM	**80K***	**32K*****	64K	48K	64K	32K	32K	16K
EXPANDABLE TO	**256K****	**256K****	64K	NO	N/A	32K	64K	48K
KEYBOARD FEATURES								
NUMBER OF KEYS	**87**	**71**	63	61	66	73	53	40
USER DEFINE FUNCTIONS	**10**	**10**	N/A	4	8	10	N/A	N/A
SPECIAL WORD PROCESSING	**YES**	**YES**	NO	NO	NO	NO	NO	NO
GENERATED GRAPHICS (FROM KEYBOARD)	**YES**	**YES**	NO	YES	YES	YES	YES	YES
UPPER/LOWER CASE	**YES**	**YES**	YES	YES	YES	YES	YES	YES
GAME/AUDIO FEATURES								
SEPARATE CARTRIDGE SLOTS	**YES**	**YES**	NO	YES	NO	NO	YES	NO
BUILT-IN JOYSTICK	**NO**	**YES**	NO	NO	NO	NO	NO	NO
COLORS	**16**	**16**	15	128	16	16	9	8
RESOLUTION (PIXELS)	**256x192**	**256x192**	280 x 160	320 x 192	320 x 200	256 x 640	256 x 192	256 x192
SPRITES	**32**	**32**	N/A	4	8	?	16	?
SOUND CHANNELS	**3**	**3**	1	4	3	1	3	?
OCTAVES PER CHANNEL	**8**	**8**	4	4	9	3	5	3
A.D.S.R. ENVELOPE	**YES**	**YES**	NO	NO	YES	YES	NO	NO
PERIPHERAL SPECIFICATIONS								
CASSETTE	**2 CHANNEL**	**2 CHANNEL**	1 CHANNEL	2 CHANNEL	1 CHANNEL	2 CHANNEL	?	?
AUDIO I/0	**YES**	**YES**	NO	YES	NO	?	?	?
BUILT-IN MIC	**YES**	**YES**	NO	NO	NO	NO	NO	NO
DISK DRIVE CAPACITY	**256K**	**256K**	143K	92K	170K	100K	?	?
(LOW PROFILE)	**YES**	**YES**	NO	NO	NO	NO	NO	NO
CP/M® COMPATIBILITY (Standard 80 column programs)								
CP/M® 2.2	**YES**	**YES**	NO****	NO	NO*****	YES	NO	NO
CP/M 3.0	**YES**	**YES**	NO	NO	NO	NO	NO	NO

Specifications are subject to change without prior notice.

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* 64K user addressable plus 16K graphic support
** 240K user addressable plus 16K graphic support
*** 16K user addressable plus 16K graphic support
***** Apple II can accept modified 40 or 80 column CP/M
***** Commodore 64 accepts 40 column CP/M
? Data not available

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G-Pascal puts power in home

Like many home computers, the Commodore 64 has been restricted by software limitations. Ian Webster discusses a new implementation, G-Pascal, which unleashes its power.

ONE of the enduring problems of home computers has been the software environment supported by the hardware. As the cost of hardware has decreased and designers have been able to improve the quality of the hardware environment with better graphics, color and sound, home computers have become much more attractive to consumers.

Unfortunately, the software environments supplied with the machines have not developed as well, particularly when manufacturers decide new models must be compatible with previous machines. Control of the new features usually requires a blizzard of PEEKs and POKEs, a clear understanding of the internal memory map of the machine and familiarity with machine code.

Often when extensions to the Basic interpreter are provided, the space constraints in ROM make the code size of the extensions rather than the speed of the machine the most important consideration. Programmers quickly become frustrated with the Basic interpreter, particularly if they are writing games which require reasonable execution speed to be playable.

Two Melbourne programmers, Nick Gammon and Sue Gobbet, recognised the problem on the Apple microcomputer and wrote a system for programmers who wanted to write games. The system was based on a p-code Pascal implementation modelled on the UCSD Pascal programming environment.

The Pascal implementation supporting all the features of the Apple environment offered by the Commodore 64 is one of the worst available, considering the power-rich features the hardware supports.

Graphics and sound are almost beyond the reach of novice programmers using the Commodore 64 and a playable game would be difficult without a lot of experience. Gammon and Gobbet have just released an implementation of their G-Pascal game programming system for the Commodore 64 that provides outstanding support for all of the features of the system.

```
CONST COLOUR =  1; POINT = 2; YELLOW = 7;
BEGIN
  DEFINESPRITE (128, $FFFFFF, $F0000F, $F0000F, $ FFFFFF);
  SPRITE (1, POINT, 128, 1, COLOUR, YELLOW);
MOVESPRITE (1, 50, 50, 256, 256, 180);
END.
```

A six-line program to define and move a sprite

G-Pascal supports a memory-resident development system with a powerful text editor to create the source code and a high-speed compiler which implements a substantial subset of Pascal. Seventy-six extensions for control of the Commodore 64's features are available. The compiler supports independent, relocatable modules and a ruintime package is available for people who want to develop standalone applications or games.

Support for graphics, sprites and sound is superb and the attention to control of the machine environment has created a system that should become very popular with programmers trying to use the features of the Commodore 64. All graphics modes are supported, including high resolution and control of the different memory banks available for video memory.

```
G-Pascal compiler Version
3.0 Ser= 4321

Written by Nick Gammon and Sue
Gobbett. Copyright 1983 Gambit
Games, P.O. Box 124 Ivanhoe 3079.
Victoria, Australia.

P-codes ended at 412E
Symbol table ended at C026.

(C)ompile finished: no Errors.

(E)dit, (C)ompile, (D)ebug, (F)iles,
(R)un, (S)yntax, (T)race, (Q)uit?
```

The G-Pascal environment

The sprite commands are possibly the most comprehensive yet written for any machine on the market. They include Definesprite, Positionsprite, Movesprite, Animatesprite, Spritestatus, Spritecollide, Groundcollide and Spritefreeze.

All these commands have a parameter list. The sound commands are as comprehensive and provide complete control of the SID chip.

Advanced game programmers require control of the interrupt routine and the position of the raster line of the screen at any time to avoid flickering as the image is drawn on the screen. G-Pascal provides this control to the programmer as well as the capability to use assembly language subroutines.

The Commodore environment is idiosyncratic because of its use of intelligent peripherals. G-Pascal has overcome the problems that seem to plague Commodore system software developers and supports all the standard file commands.

The text editor is line-based and offers enough featurse to satisfy most users. A Debug and Trace mode is available to display the information needed to track down difficult program bugs.

The manual is a reference document and does not teach the buyer to program in Pascal, but describes the operation of the G-Pascal system and all the commands. G-Pascal is a thorough, considered implementation of a game programming environment for the Commodore 64.

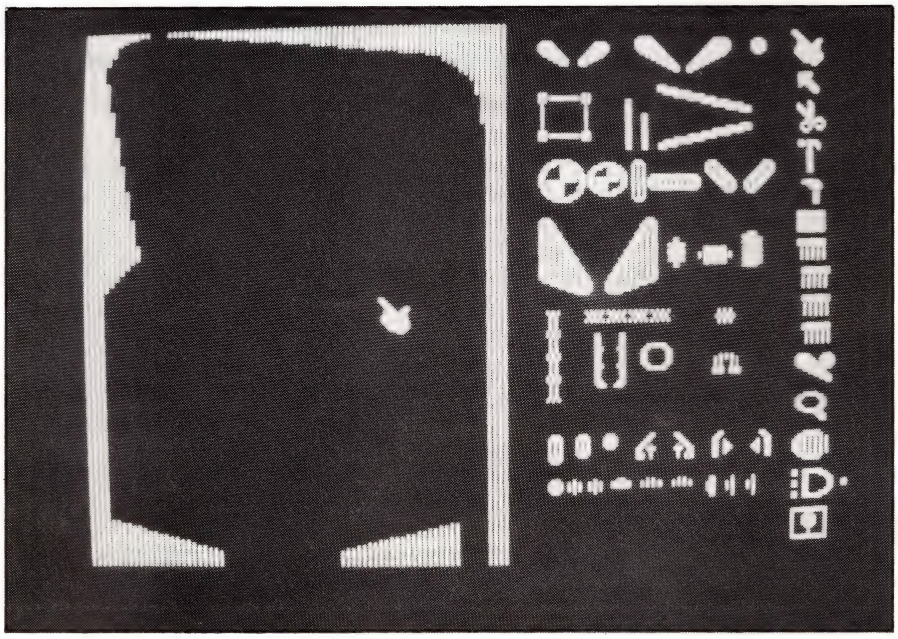
It unleashes the power of the machine and provides a superior program development system that will enhance the quality of any user's programming with a Commodore 64.

You may have heard that Australian programmers are as good as any. Here is the evidence.

G-Pascal is available for $A29.95 from Commodore dealers or Gambit Games, Box 124, Ivanhoe, Vic. 3029.

Pinball: full tilt into future

Bill Budge's games packages for Apple screens have extended the scope of its high-resolution graphics screen. Ian Webster discusses Budge's Pinball Construction Set, a pacesetter for microcomputer software.



The Pinball Construction Set environment.

BILL Budge is a superstar of the Apple Screen.

From his earliest work with Space Trilogy, the first arcade games available for the Apple, to his 3D graphics utility package with the spinning space shuttle that mesmerised Apple enthusiasts around the world in 1980 and on to his best-selling pinball simulation, Raster Blaster, he has extended the scope of the Apple high resolution graphics screen.

Many people don't realise it has taken programmers five years to master the Apple high resolution graphics. This has required a large community effort and the key conceptual insights programmers like Budge have provided.

Now Budge has produced his most impressive work. The Pinball Construction Set harnesses his outstanding graphics technique to provide a program that is almost a paradigm for the direction of microcomputer software.

He calls it the first software toy. The Pinball Construction Set provides a pinball table environment with all the parts that can be used to make a pinball game board, such as flippers, bumpers, slingshots, knockers, ball hoppers, launchers and spinners. A toolkit for manipulating the parts includes a paintbrush, hammer, scissors, pliers, screwdriver and magnifying glass, all used to modify the table design.

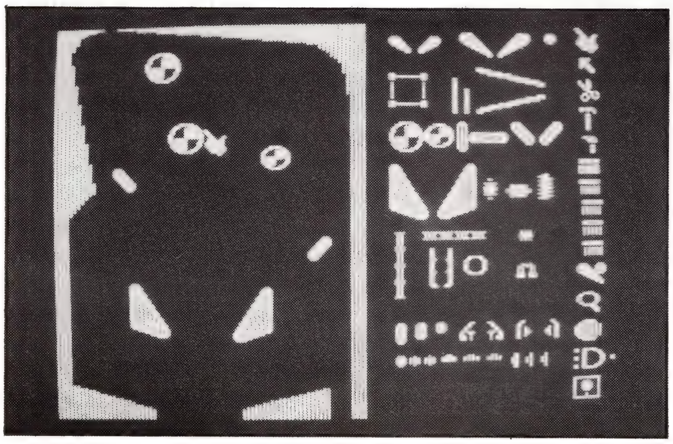
Control over the playing environment is provided with settings for gravity, speed, kicking strength of the bumpers and elasticity of collisions between balls and surfaces. A wiring kit is provided to set the scores for any part of the table and to wire the table for sound.

The construction set uses a joystick to manipulate a set of icons. The joystick manipulates a hand that floats over the top of the screen. Positioning the hand on top of an icon, selects that icon when the joystick button is pushed.

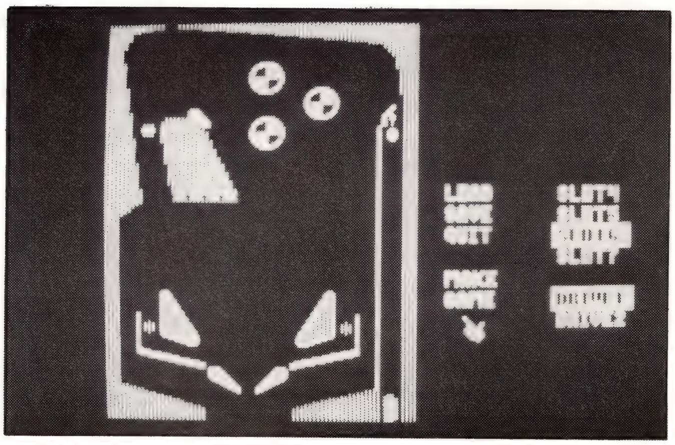
The icons are used as a master to provide access to the different modes of the environment. A pinball simulation is constructed by dragging any of the parts on to the table and positioning them. Parts can be modified or painted using the tools and wired for scoring and sound.

At any time a game of pinball can be played by positioning a ball on the table and selecting the play icon. Once a pinball simulation has been constructed it can be saved to disk by selecting the disk icon. Selecting the world icon enables the physics of the simulation to be changed.

While pinball may not be to everyone's liking and there is a limit to the number of variations anyone would



Building a pinball machine.



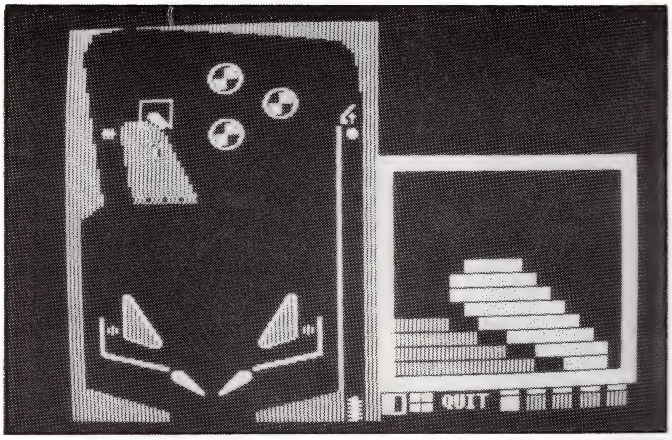
Saving a design to disk.

want to try, this is a superb program. Electric Arts, the company that distributes Budge's programs, is about to release another program modelled on the Pinball Construction Set.

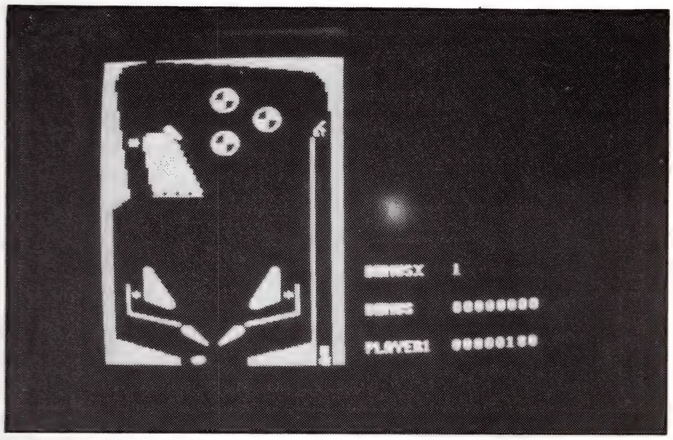
It is called the Music Construction Set, and uses the same environment to support the creation and playing of music: It is a sensational package, particularly on the Commodore 64 with its excellent music capabilities. These programs, together with applications packages like Bank Street Writer, are the future of consumer software.

Programmers writing for the education market should take particular note of these programs.

Budge has produced a conceptual approach that can be used wherever environments need to be constructed and manipulated. Look and learn. ☐



Using the magnifying glass.



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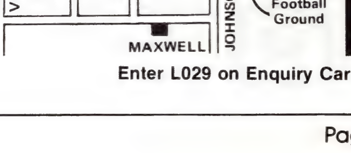

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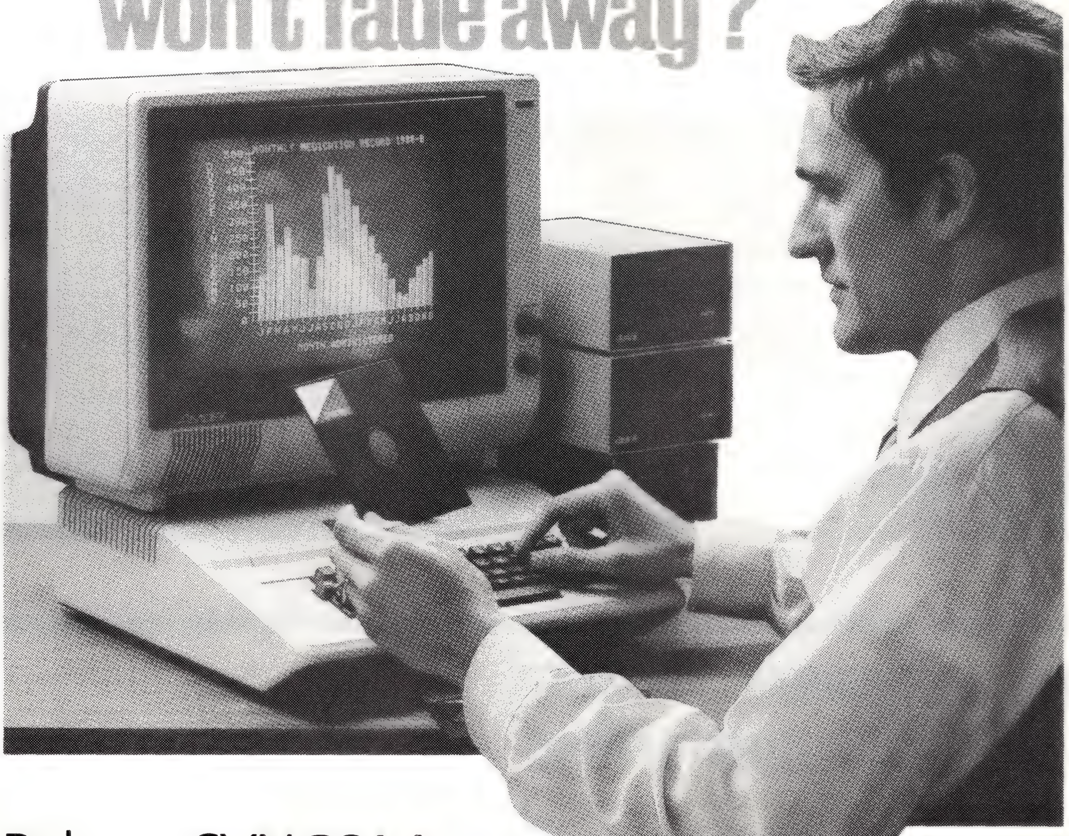

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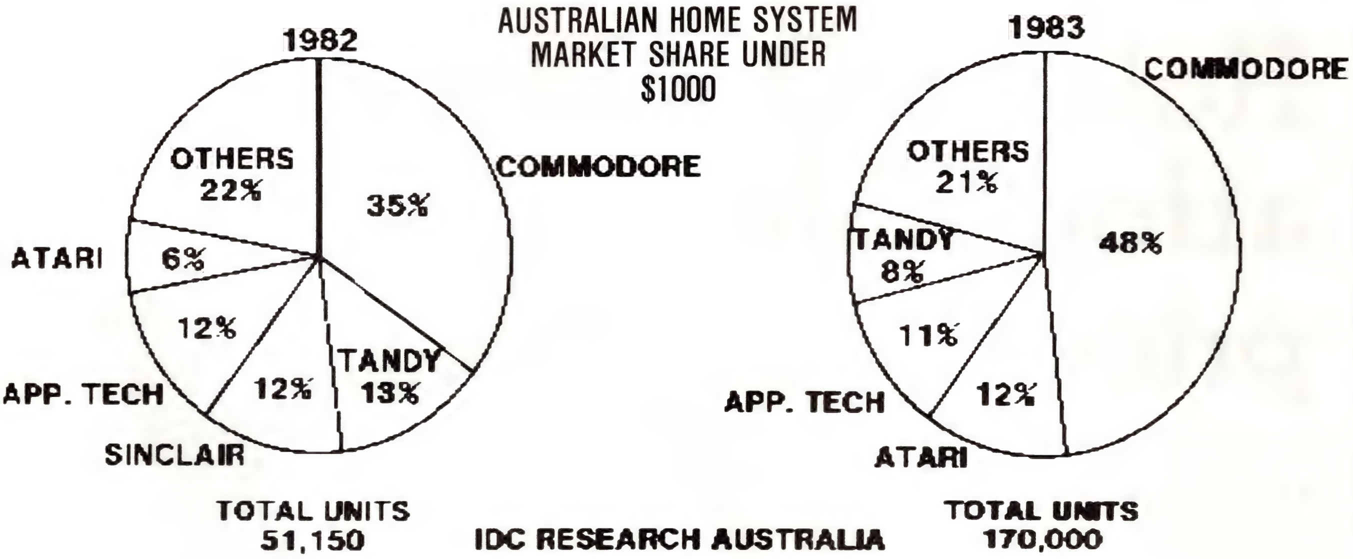


AUSTRALIAN HOME SYSTEM MARKET SHARE UNDER $1000

IDC RESEARCH AUSTRALIA

Consumers speak on micros

By Ian Webster

SEVEN years ago the microcomputer market didn't exist. During the past seven years a small market has been established, and it was estimated there was a 2.5 million installed base at the end of last year.

Industry market research groups have attempted to predict the growth of the market, usually projecting exponential growth based on the estimates of the manufacturers and marketers. Little attention has been paid to the attitudes of potential consumers and their interest in microcomputers.

While the industry has confidence in the prospects for growth, this lack of information about the intentions of consumers has created a situation where individual manufacturers are uncertain about the correct strategy for gaining market share.

Apart from several rare but usually successful exceptions, the tendency has been to follow the rest of the industry, coercing the consumer with sophisticated and often threatening advertising campaigns that urge *"Get with it or else"*. While scare tactics may be effective with the particular socio-economic group in the community targeted as potential buyers this year, the mass-media campaigns of the manufacturers are defining an image, not only of the microcomputer, but all computer-based technology.

It is difficult to measure the impact of these advertising campaigns on the attitudes of consumers, as their effect is much wider than the sales of microcomputer systems indicate. In the period leading up to Christmas, more than 1000 30-second commercials will appear on television. Most Australian will be exposed to the message of the fledgling microcomputer industry.

A 1980 US study of the potential market for home computers indicates why venture capitalists around the world have been reaching for their cheque books. The study used a model to predict the market based on the concept of innovators and imitators that had been used with success in predicting the market for other consumer electrical goods such as calculators.

These figures suggest a tidal wave of discrete personal computer systems will flood our society. Some of the cheaper microprocessor chips used as controllers have already sold in the tens of millions.

IDC, an industry research group, last year decided to include a count of the installed base of computer systems costing less than $A1000 in its annual survey of the Australian market. These figures indicated home computer systems were outselling desktop computers three to one.

IDC's estimates for this year should be considered conservative, but reflect a market penetration that is comparable with the US market.

Every year the final-year marketing students at North Sydney Technical College research a marketing report on the potential of a product. This year the 23 students, who formed themselves into a company called Datahome, have prepared a report on the home-computer market. This report is the first survey of consumer attitudes to home computers.

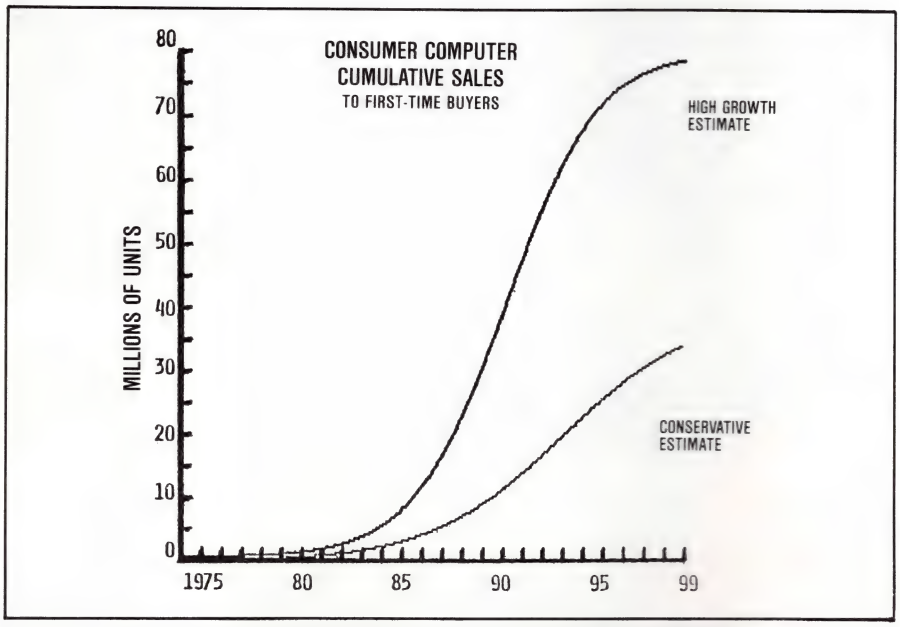
The students interviewed 30 people involved in the distribution, retailing and marketing of home computers. The market segments were identified as education, entertainment, home/business and communications. Important factors influencing the decision to buy were price, brand reputation, reliability, service, software compatibility and extendability.

Most respondents considered the market was being driven by the video game phenomenon and that home computers didn't have any real use in the home. Widespread scepticism about the capacity of department stores to sell home computers was expressed. Disagreement arose about the importance of service backup, who made the decision to buy and the importance of features and packaging.

These opinions reflect the traditional data processing background of the local microcomputer industry, which is much more comfortable marketing desktop computers than home computers.

The industry has not learnt from the success of Commodore in this market.

Eighty computer users were interviewed, and 90 per cent indicated their computer had met their expectations, more than 50 per cent paid less than $A1000 and 40 per cent bought the computer for the technology it represented. More than 50 per cent of the users spent more than five hours a



Consumer computer cumulative unit sales to first-time buyers.

week with their computers, while 25 per cent used them more than 20 hours a week.

The users indicated communications was not a viable use for home computers at present, despite the attention given to this aspect by the industry, and that the entertainment use was split into games and hobby activity.

The survey of potential users involved more than 400 people targeted as males aged 19-60 who did not already own a computer.

Magazines were rated as the prime source of information about computers, and 98.5 per cent were able to describe a home computer. Only 18 per cent said they would never buy a home computer, 14 per cent intended to buy within 12 months and another 12 per cent intended to buy within two years.

Computers had been demonstrated to 36.3 per cent of those interviewed, 12.5 per cent had visited a computer dealer and 19.5 per cent had visited the computer section of a department store.

While a low priority was attached to home computers by 64 per cent in a list of home consumer electrical goods, 74 per cent considered home computers important as educational tools for children. This ranking should be compared with 81 per cent considering encyclopaedias important.

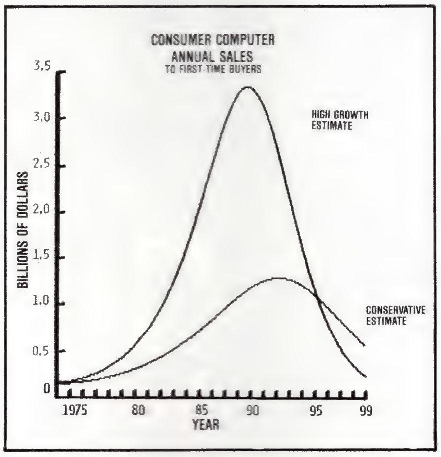
Only 7 per cent indicated their knowledge of computers was good and 64 per cent said their knowledge was limited or poor.

The research of the Datahome students indicates the extent to which the industry has closed on itself. The attitudes and images the industry has developed to create the microcomputer market are the attitudes and images that the potential buyer presents to the industry.

The education connection has been exploited so skilfully by the manufacturers that it is already almost impossible to extricate education from the domain of the mighty machine. The statistics in the report are supported with a report on the present state of the market and suggested marketing strategies.

The report should be read by everyone in the industry interested in attitudes of the industry, users and potential users.

It may encourage someone to conduct a much-needed extensive survey of the Australian public's attitude to computers. The report is available for $50 from Datahome, 19 Gould Avenue, St Ives, NSW 2075. ☐



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GAMESMANSHIP

Tom Lopez is vice president of Activision, a leading US software company that has emerged recently to provide entertainment software for video game machines and home computers. He was in Australia recently to investigate the local market and arrange distributon for Activison's range of game cartridges. Micro spoke to Lopez about the emerging computer entertainment industry and its similarity to the record, television and film business.

Micro: *What is the market for consumer software?*

Lopez: It is going to be enormous. At present, I would estimate an installed base of 10 million games machines and a home computer base of just under 2 million. Most market observer analysts expect the installed base of home computers to approach 7 million by 1986 and after that, we will start to see a different cycle emerging. Eventually, most people will be consumers of software.

Micro: *Does the market vary in different geographical areas, or is it uniform?*

Lopez: In the western world it is fairly uniform, but at different stages of development. Australia feels about 12 months behind the US. Some markets, like the Japanese market, are a little different. They prefer very bright, fast-action games and don't appear to be as interested in some of the recent developments in the US, such as interactive adventures.

Micro: *Where do you discover game software?*

Lopez: Nearly all of our development is done inhouse, We get hundreds of programs in the mail, and I'm always on the lookout for talent. But the demands of standard of software required by the market is usually beyond the free-lance author. Often I see a good idea, but then it is completely rewritten for us.

Micro: *How are games developed?*

Lopez: We work in a think-tank environment. Designers are given as much support and creative space as possible. Ideas are often generated at brainstorming sessions. Then after initial development, a storyboard is prepared. A graphics designer and project editor assist the programmer, who creates the program. Writing a game requires an intense creative effort over a six-month period. That can be very frustrating and traumatic.

Micro: *How do you manage the process?*

Lopez: We use an editorial team, just like other entertainment industries that are trying to ensure that the product is marketable. We use designers land writers to help the programmer develop the concept, an editor is always in control of the project and a packaging and marketing person is involved in naming the game and developing the imagery that will be used to promote it.

We also have people involved in test marketing, opinion group sampling and all the tools of modern marketing.

Micro: *What equipment do the programmers use?*

Lopez: We use DEC equipment, usually an 11/23 or 11/40. Each programmer has a terminal and their own space.

The environment of the target machine is emulated on the DEC minicomputer, and then the program is cross-compiled for the target machine. Most programmers have packages of routines they have developed that supports their particular style that makes it easier.

Micro: *How do you motivate your programmers and overcome the one-hit-wonder problem?*

Lopez: Most of our programmers are not motivated by financial reward or market success. They are very young and write for themselves or for the approval of their peer group.

This creates the problem of getting these kids to produce marketable products that are not too esoteric or complicated. After a project is completed, we send them on holidays for a month to get it out of their system.

Provided, the right support people are used and a creative environment is established with lots of peer group activity, I think programmers can produce regular, high-quality programs, but they need to be managed.

Micro: *What are lthe marketable qualities of entertainment software?*

Lopez: This is difficult, as you are dealing with the vagaries of consumer attitudes in an area where there are few precedents. The game must be playable.

I think the playability is the most important quality, as it involves all of the aspect of the package. Unfortunately, feel is the hardest part of the process to capture.

Packaging and promotion, the storyline and graphics quality are all important, but if the game doesn't feel right, it won't be successful.

Micro: *How do you market a package?*

Lopez: The approach is similar to that for books or films. We rely very heavily on word-of-mouth publicity. We use advertising to start a promotion,and then try to promote the package strategically.

Unfortunately, the influence channels that are used by books and films, such as the review coverage in the daily press are not available yet, and until software packages get the same coverage, we have to rely on ad hoc promotion. We tend to take successful strategies from other industries and try them out to see if they are appropriate.

It is a costly business, especially if the product isn't successful, and they have to work within a limited life profile of about four months. Although, once a game becomes successful it will continue to sell for many, many months.

Micro: *Is style important?*

Lopez: Most of our programmers have an identifiable style, and most prefer working within a particular genre of game styles. As yet I don't think we have any real superstars who can sell a product based on their reputation, although it may help initial sales.

Micro: *What is your analysis of the Australian market?*

Lopez: I've been surprised at the sophistication of the market. Futuretronics has done a good job with the Atari game system, and Commodore is very strong.

I think consumer attitudes will move in line with the US experience, but about 12 months behind. Successful US products should be successful here although there doesn't seem to be a big emphasis on the marketing of software yet. ☐

Futuretronics shoots for nuts and bolts

Atari's Australian distributor Futuretronics has fewer pretentions of being a computer company than virtually any other player in the country. While the company thrives on the popular image of computing, it is really only concerned with importing, warehousing, distribution and promotion of consumer products, as Tony Smith reports:

WHILE accepting Futuretronics' claim to be Atari's most successful international distributor per capita, the relatively modest penetration of Atari computers in Australia may be a fair measure of the disappointing results achieved by what has been quite an attractive range of systems. Within their market segment, Atari has pioneered full (526) color graphics, dual-track cassette tape carrying data plus voice for educational purposes, plug-in software in ROM cartridges and quality game controllers.

Only its relatively expensive disk drives have been a continuing disadvantage. Yet, despite software availability second only to Aple, Atari Computers' market penetration could hardly be considered impressive.

Atari has been dominated by the boom and bust world of television games, with its true computers relegated to second place in its thinking.

A similar point of view dominates Futuretronics, even with its relative isolation from the worst effects of television game price cutting, and despite several useful product lines which continue to be hidden behind the Atari monster. The only real effect of Atari's huge television game induced losses on Futuretronics has been occasional problems with supply keeping up with demand as Atari has moved to cut manufacturing costs.

The enormous profits made earlier by Atari on the upswing of the television game boom have enabled that company to ride out a round of heavy losses, but Futuretronics' protection is quite different. As a distributor, any price cutting also forces down the price at which it imports units, so its profitability depends almost entirely on the numbers it can move out the door.

It claims that its sales of television games have doubled in the last 12 months, and confidently predicts they will double again next year. Within the games area, Futuretronics also represents Activision's software for Atari and assorted hand-held electronic games in the $A40 to $A70 range.

Potentially the most exciting product range to be handled by Futuretronics is the Androbot personal robot. Since the Androbot deal was announced, Futuretronics reports enquiries running at 15 a day.

Atari has been dominated by the boom and bust world of television games, with its true computers relegated to second place in its thinking.

It expects to have samples for a launch early next year with commercial stock of the full Androbot range. Atari's original offerings, the 400 and 800 have been recently superceded by 600XL and 800XL.

The more recently released 1200 is expected to be replaced by a choice of 1400XL and 1450XL early next year, the latter with internal disk drive. Add on disk drives for all models are expected to go below $A700 as the new range becomes fully available, but that price will remain one of the weaker points of Atari's offerings.

With Alan Kay, veteran of Xerox's highly repurted Californian Palo Alto Research Centre, having headed Atari's development team for more than a year, it is anticipated that major announcements of a completely new product range cannot be far away. Futuretronics is looking to January for the big news.

One change already evident at Atari is the company's recognition that the value of some of its games software is potentially bigger than its hardware can support, and so releasing it for the VIC-20. Even with the huge slice Commodore has taken out of the home market, Futuretronics believes total market growth will give it worthwhile returns for the time being.

It estimates it will secure 20 per cent of a total Australian market of 200,000 home computers next year, and in the longer-term, is heartened by the Australian government prediction of 60 per cent of Australian homes having computers by 1990. While Futuretronics is a solidly Australian company, the only visible recognition it has given to Australian design skills has been in the construction of the futuristic front section of its head office and principal warehouse in the Melbourne suburb of Oakleigh South.

Apart from looking reminiscent of a giant flying saucer, the interior of the office area achieves some clever illusions of being even bigger than it is. The reception area and main offices share a view across an internal garden, complete with large lizards, to an elevated board room which gives the appearance of being centrally positioned. ☐

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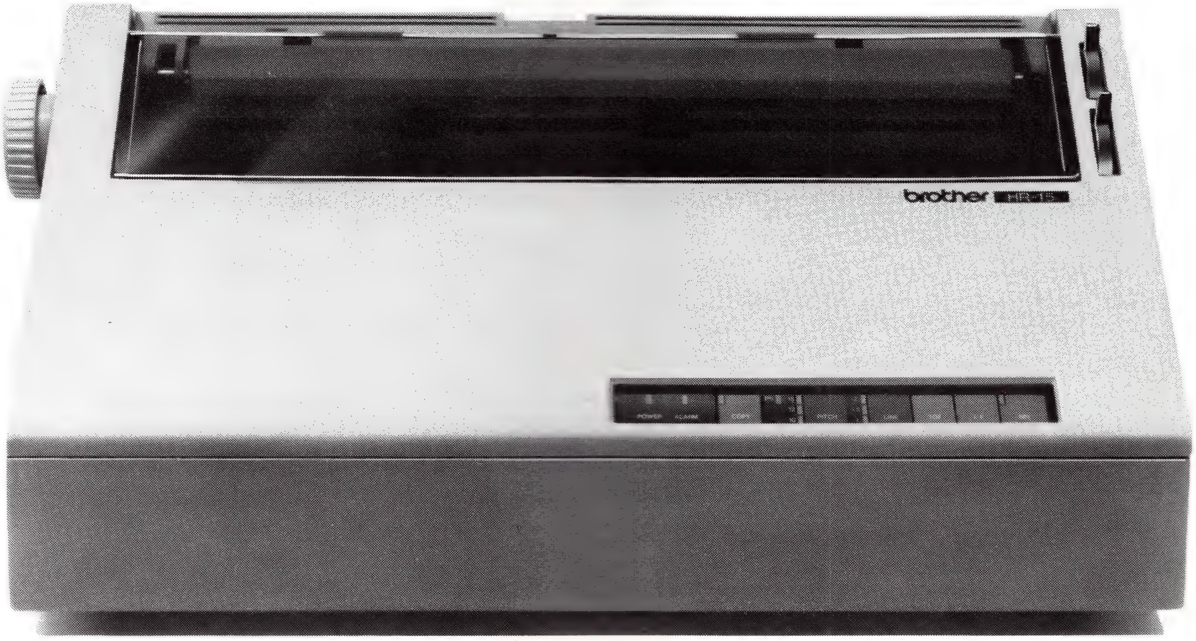

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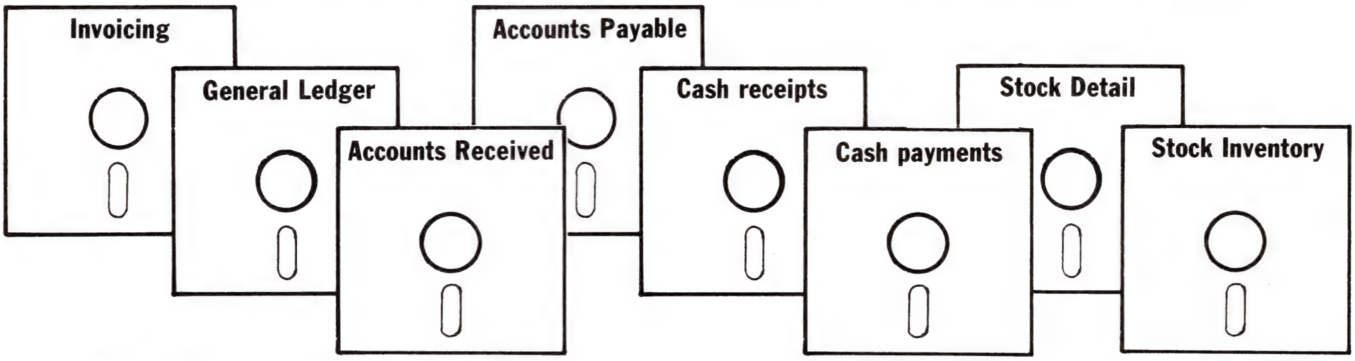

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Terry Crews holds the Australian Magnum from Dulmont . . . a product with punch.

Personal computing goes portable

THE information explosion has been boring on for many years unabated. But until last year it largely shared the same fate as money — you could not take it with you. Although the Dynabook (flat-screen, book-size computer running Smalltalk) concept has been around since Atari's chief designer Alan Kay was at Xerox's Palo Alto, California, laboratory in the early 1970s, the world had to wait until industry commentator Adam Osborne decided to put some money where his thoughts were to see the first serious portable — the Osborne I.

That landmark unit featured several loosely coupled conceptual advances: portability, integration of basic components in one design, bundling of useful software tools and an artificially low pricing structure which anticipated mass production. Osborne I clearly worked.

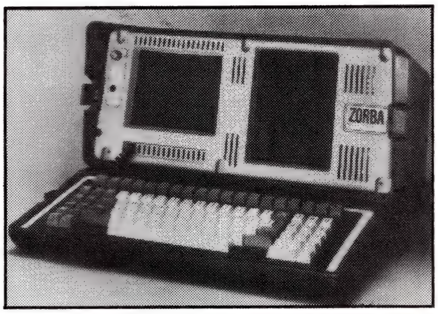
Before the manufacturing company began slipping several months ago, it had sold many more units than all its followers combined. There are now more than 30 companies in the world market with computers featuring all or most of Osborne's novel concepts.

While Osborne is first remembered for portability, many followers have put his pricing and packaging on the desk top. But it is its portability which truly has captured the industry's and users' imaginations. New developments race ahead at speeds unprecedented in even this game.

To date, portability has been achieved almost entirely through packaging advances based on established proved components, but it has given as big a lift to the status of design engineers as has the issue of ergonomics.

Portable-specific component design should be a field of growing interest in the next few years, impacting such areas as bubble memory, optical card readers, digital broadcasting, photographic printing and others not yet even thought of. Despite the provision of a high level of computing power in such recent hand-held portables as Australian-designed and built Magnum and human interface leader Gavilan, there always should be room for larger transportables which ought to be able to contain at least an order of magnitude more power than the best of the hand-helds.

One component usually overlooked by portable designers is a printer, which conflicts surprisingly with some industry observers' view that the higher powered hand-held models now being released will function primarily as calculators for words. Built in and portable attachable printers are very much the exception, with most suppliers opting for the easy way out of serial and parallel communication ports to give the user his choice of non-portable, relatively expensive printers.



Insystem's Zorba . . . following in Osborne's wake.

Using the "calculators for words" definition, one unit which is not quite a portable computer should receive special consideration. The Brother EP-22 is a thermal transfer dot matrix typewriter which fits inside a briefcase, offering 2K-bytes text memory, 16/char display, word processing operations and serial communications so it can also be used as a computer output printer.

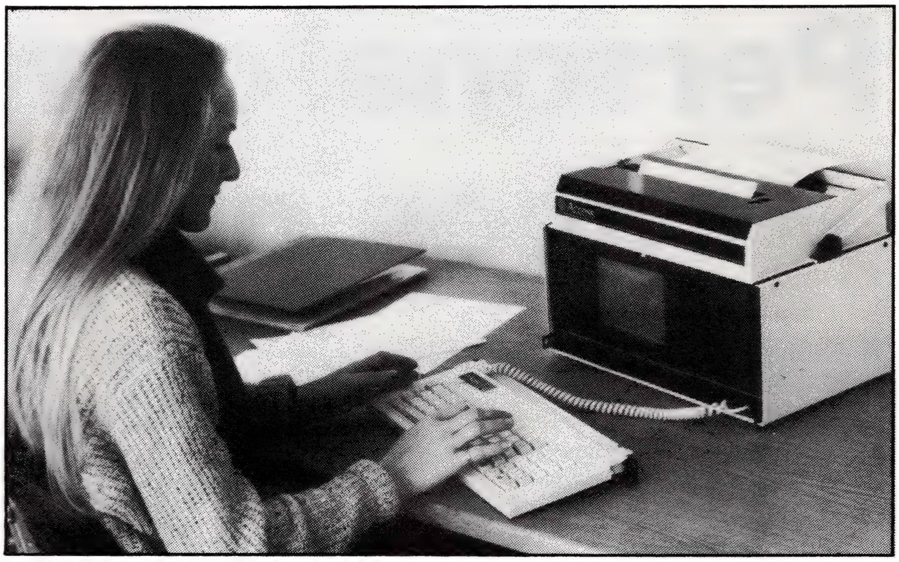
With Osborne's demise due to its mistimed and incestuously misconceived second model, the Executive, the position of market leaders has been muddied. Kaypro already had taken over the lead in the market Osborne defined, and its higher disk capacity versions have extended its potential market. The Australian - Japanese Amust 816 briefcase model should make inroads at the bottom of the CP/M range.

Myer Computer and Business Centre at least, is confident the NEC 8201 will sweep all before it in the low-end hand-held marketplace, the one area which can trace origins independent of Osborne, to the leading pocket calculator companies. That area also produced one of the industry's most delightful idiosyncracies, the four-pen printer-plotter which attaches to the Sharp 1500.

It is, however, likely that most of the 8-bit hand-helds will be relatively short-term products, to be squeezed to death when the makers of proto-Dynabooks get serious. The workhorse CP/M-based Osborne followers may be similarly squeezed by MS-DOS-based IBM PC followers. □

The Japanese connection

By Tony Smith



Freelance writer Millie Milan using her Access.

HEWLETT-Packard apart, all contenders in the low-end, hand-held market have solidly Japanese origins — even the Tandy 100 and Olivetti equivalent, sourced independently of those companies' main product ranges. There is, however, quite significant variation within that class, from the Tiny Sharp 1500 with its tinier add on four-pen plotter, to some rather more solid-looking alternatives.

Leading printer supplier Epson and Silicon Valley pioneer Hewlett-Packard have packaged some components unique to themselves in their relatively more expensive offerings. But there is certainly real commonality between Casio and NEC's offerings and those picked up by Tandy and Olivetti.

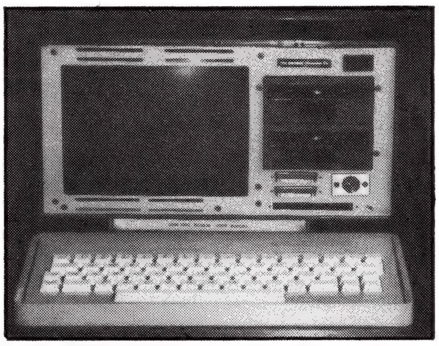
Firstly, all four use a version of the less than widespread Intel 8085 processor which was resoundingly beaten in most markets by the Z80. Although trying hard to be taken seriously, and offering some moderately useful applications at a reasonable price, that lowest extremity of the business computer range is valid primarily for remote data capture, for which the available text processors and communications software support only a portion of total potential applications.

In contrast, the complete range of Aunty Jack-class portables available in Australia have unapologetic Anglo-Saxon origins. The only Japanese input was to the Australian-conceived Amust 816 which succeeded in squeezing a CP/M machine into a briefcase, and even powering it with an optional external 12-volt battery — almost taking it out of the true Aunty Jack class.

Obviously, the Japanese leave the ripping-off of arms to their Sumo wrestlers who, in turn, are not consulted on portable computer design. There are, of course, obvious limits to how much variation can be injected into self-contained CP/M portables following the pattern conceived by Adam Osborne.

Only a day before this report went to press, Micro learnt of an Australian supplier, Portable Computer Co, which is trying to bury the Osborne model by putting a five slot S-100 bus inside its portable. (The same company aims to have a NatSemi 16032 processor board running inside the same portable in January, with your choice of available S-100 16-bit processors in the meantime.)

It also is bending the traditional disk standard for such machines by putting the less than popular 3.25in variety in its Porta Pak and your choice of the new high-density floppies and Winchesters in its S-100 model. Those Australian revolutionaries apart, the other would-be challengers to the dominance of Osborne and now Kaypro, generally have opted for a single variation to the prescribed formula:



Portable Computer Co's Porta-Pak.

- Access included a printer.
- Archives picked up and renamed the US Pied Piper which left out the screen.
- Otrona's Attache opted to look more attractive.
- Televideo turned serious about graphics by providing GSX.
- Zorba added the useful ability to process diskettes from a diverse range of other machines.

Meanwhile, Kaypro took over the market, aided considerably in Australia by its close involvement with the strong President Computers distribution chain. The solid, reliable Kaypro II was succeeded close to schedule by the double-density Kaypro 4 and the only widely available hard-disk portable, Kaypro 10.

Elmeasco's Otrona . . . looking more attractive.

President has become so familiar with Kaypro that when it recently ran low on 4s, it refurbished some IIs with quad-density drives to produce the unique Australian Kaypro 8 with its own Osborne-style diskette carrying slot in the space left between the slimline drives.

Despite the pervasive demands of IBM Personal Computer compatibility, the recent, and as yet smaller, crop of 16-bit Aunty Jack transportables contains several more interesting variations. Several features omitted from the table *(see page 78)* but common to most of this class, were an optional 8087 maths coprocessor and inbuilt modems that offer a sophisticated way of making telephone data connections in the US, but not yet in Australia.

The super power Apricot out of the UK has a separate VDU, small enough also to be carried, as well as a two-line message display within the processor unit. Apricot and Computer Devices' DOT have opted for the emerging 3.5in microfloppy disk standard and switchable 132-char wide-screen configuration, with DOT also including a thermal printer.

The brilliantly named Chameleon carries a Z80 processor as well as its 8088 to broaden the number of machines it can imitate. DOT apart, this class only has arrived in the Australian spring and, with the moving in of some of the proven 8-bit players, it promises to be the most vital segment of the whole PC market well into next year.

The final subclass of portable computers has just arrived on the world scene. There are, as yet, only three Australian players, each, not surprisingly, claiming to have the world's ultimate portable computer. Much more surprisingly, one of those three, Dulmont's Magnum, has been entirely designed and built in Australia. It is clearly emerging as the most important product of the fledgling local industry.

As befits the weight class, the Japanese have an early entry with the Sharp 5000, the first computer to make major use of bubble memory and which also features an optional in-built printer. The US entry is Gavilan, being brought to Australia by no less a judge than Electronic Concept's Rudi Hoess.

While not as powerful as the other two in the straight MS-DOS environment, it features its own Lisa-like friendly icon-based human interface written in the efficient Fourth language, and has an internal 3.5in disk as well as plug-in portable expansion capability to another disk and/or printer. And at the top there is Magnum, although in price it comes in below most CP/M machines, while including its distributor, President Computer's extensive range of packaged software tools.

Although it is one of the first machines of any design in the world to go into volume production using Intel 80186 processors, which it switches off between keystrokes to conserve power. Magnum's price is put in better perspective when it is realised that something extra is needed to provide long-term data storage. While plug-in software is available in high-capacity ROM cartridges, archival storage requires either communication with another machine, or the additional purchase of a matching twin slimline disk expansion unit. □

HOW THE PORTABLES LINE UP

MAKE/MODEL	PROC	RAM	ROM	SCREEN	TEXT	GRAPHICS	MASS STORAGE	INTERFACE	OP SYS	BATTERY	WEIGHT	EXTRAS	PRICE
HAND HELD 8 BIT MACHINES:													
Casio 200	8085	8-32	32-40	LCD	20 x 8	160 x 64	cassette	RS-232, parallel	Prop Basic	4 AA	1.54 Kg		$
Epson HX20	6301	16-32	32-72	LCD	20 x 4	120 x 32	microcassette	2 RS-232	Ext MBasic	MiCad	1.7 Kg	printer	$1400
HP 75C	Prop	16-24	48-144	LCD	32 x 1	-	mag card, cassette	HP-IL	Prop Basic	3 MiCad	737 g		$
NEC 8201	8085	16-128	32-64	LCD	40 x 8	240 x 64	cassette	RS-232, parallel	Prop Basic, text, comms	4 AA	1.7 Kg		$1095
Olivetti 10	8085	8-32	32-64	LCD	40 x 8	yes	cassette	RS-232, parallel	Prop Applic	4 1.5 V	1.7 Kg		$
Sharp 1500	Prop	4-12	16-24	LCD	26 x 1	-	cassette	RS-232	Prop Basic	4 AA	375 g	plotter	$289
Tandy 100	8085	8-32	32-64	LCD	40 x 8	yes	cassette	RS-232, parallel	Prop Applic	4 1.5 V	1.7 Kg		$1099
FULL CP/M MACHINES:													
Access	Z80	64		7" amb	80 x 25		2 x 5.25 SSDD		CP/M	-	15 Kg	printer	$
Amust 816	Z80	64		5"	80 x 24	-	2 x 5.25 DSDD	RS-232, parallel	CP/M	12 volt	8 Kg	briefcase	$2995
Archives	Z80	66	6	extern	80 x 24	-	1 x 5.25 800K	parallel	CP/M	-	7 Kg		$1995
Attache	Z80	64		5.5"	80 x 24	yes	1 x 5.25 DSDD	RS-232, parallel	CP/M	-	8.2 Kg		$3473
Kaypro II	Z80	64		9"	80 x 24	-	2 x 5.25 SSDD	RS-232, parallel	CP/M	-	13 Kg		$3295
Kaypro 10	Z80	64		9"	80 x 24	-	1 x 5.25 DSDD	RS-232, parallel	CP/M	-	14 Kg	10Mb hard	$6215
Osborne 2	Z80	64		5"	80 x 24	yes	2 x 5.25 SSDD	RS-232, parallel	CP/M	-	10.7 Kg		$1500
Televideo	Z80	96-160	8	9" amb	80 x 24	640 x 240	2 x 5.25 DSDD	RS-232, parallel	CP/M, GSX	-	11.3 Kg	mouse	$2995
Portapak	Z80	128		9"	80 x 24	600 x 220	2 x 3.25 500K	RS-232, parallel	CP/M, Turbodos	-	7.5 Kg	Aus modem	$2995
PPC-8	Z80	128-sky		9"	80 x 24	512 x 480	2 x 5.25 1.2M	2 RS-232, parallel	CP/M, Turbodos	-	10.5 Kg	S100 bus	$4995
Zorba	Z80	64	16	7"	80 x 25	32 chars	2 x 5.25 DSDD	RS-232, parallel	CP/M	-	10 Kg		$2995
MS-DOS TRANSPORTABLES:													
Apricot	8086, 8089	256-768		9" sep	132 x 50	800 x 400	2 x 3.5 DSDD	RS-232, parallel	MS-DOS, Conc CP/M	-	12.1 Kg	mouse	TBA
Chameleon	8088, Z80	128-256	8-48	9"	80 x 25	640 x 200	2 x 5.25 SSDD	RS-232, parallel	MS-DOS	-	12.5 Kg		$3995
Columbia	8086	128-640		9"	80 x 25	640 x 200	2 x 5.25 DSDD	RS-232, parallel	MS-DOS, CP/M-86	-	14.6 Kg		$4500
DOT	8088	128-704	40-64	9" b&w	132 x 25	640 x 200	2 x 3.5 SSDD	2 RS-232	MS-DOS	-	13.3 Kg	printer	$5744
Hyperion	8088	256	8	7" amb	80 x 25	640 x 250	2 x 5.25 DSDD	RS-232, parallel	MS-DOS	-	8.2 Kg	RAM disk	$5450
HAND HELD 16 BIT MACHINES:													
Gavilan	8088	80-176	48-176	LCD	80 x 8	480 x 80	1 x 3.5 SSDD	RS-232, expansion	Propty, MS-DOS	4 NiCad	3.2 Kg	touch pad	$6500
Magnum	80186	128-256	128-384	LCD	80 x 8	480 x 80	external	2 RS-232, parallel	MS-DOS	5 NiCad	3.5 Kg		$2495
Sharp 5000	8088	128-256	192	LCD	80 x 8	640 x 80	128K bubble	RS-232, parallel	MS-DOS	Rechgble	5 Kg	printer	$3000

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Schweppes' glass and a half of portable computing

Computing portability is quickly becoming an important aspect of commercial life. Cadbury Schweppes Pty Ltd has demonstrated that hand-held units, carried in the field by sales representatives, can streamline ordering and stocktaking functions. Dennis Keyes reports.

CADBURY Schweppes Pty Ltd is the international organisation of "glass and a half" and Schweppervescence fame. They are actually two distinct divisions, with the Cadbury side more confectionery oriented, and the Schweppes segment being a very significant long-term force in the carbonated beverage industry.

There is a good chance that a bottle of Schweppes may have come out on the First Fleet, because Schweppes already had been in operation for five years when Captain Philip sailed through Sydney Heads, and it is celebrating its Bicentenary this year. The drinks division of the Australian operation has just installed a national Route Distribution System (RDS) based on the concept of hand-held portable data entry (PDE) terminals.

The basic idea of the system is that a Schweppes representative armed with one of these PDE devices — can compose a customer's order, face to face, and without paperwork, in a fraction of the time taken by more conventional methods. He then can accelerate the delivery cycle even further by transmitting the order details via a telephone connection direct to the nearest branch office for immediate invoicing and dispatch.

The processing software is based on a US package developed by Beverage Systems Inc, a group of industry specialists, while the hardware is a mix of MSI portable data entry terminals and Texas Instrument regional processing nodes. These TI systems are completely separate from Cadbury Schweppes' main data-processing activities, based on Honeywell mainframes, but the company is "working on a dial-up link" connecting the two concepts.

In the interim, the TI nodes and the MSI satellites are capable of operating a standalone order processing, invoicing and debtors system for their major centre outlets. Peter Feeney, the manager, distributed systems, and the person responsible for technical support of all non-mainframe activities, outlines some of the philosophy behind the move:

"Being part of an international group, we're very aware of the techniques being used in our overseas divisions, and our senior management are always on the lookout for productivity gains when visiting these locations. We knew of the successes from using these hand-held devices, and we determined to make them an essential part of automating our own order-taking procedure.

We opted for a packaged software solution to ensure implementation within a single autumn-winter season when there's less activity.

"We opted for a packaged software solution to ensure implementation within a single autumn-winter season when there's less activity on the beverage market."

The branch nodes vary in size, depending on demand, ranging from a 192K-byte, 10M-byte TI990 in Hobart to a dual TI BS800 configuration at Tullarmarine — among the largest and most modern beverage distribution plants in the Southern Hemisphere. The hand-held terminals all offer the same basic configuration of 8-bit microprocessor control 16-character LED display, 22K-bytes of RAM (enough to hold about 2200 order line items plus details of about 300 products and 600 customers, and sufficient ROM to hold the entry programs.

They carry their own dual-stage battery power, consisting of normal, removable, AA-type torch batteries, plus a fixed watch-type cell to guard the memory's integrity. The unit switches itself off when not in use, as a further step to conserve the vital electrical storage, and displays a "battery low" message when there is danger of the semi-conductor circuits not getting a full dose of refresh energy.

Cadbury Schweppes could have chosen a rechargeable storage pack version of the PDEs, but decided against it, as Peter Feeney explains:

"These rechargeable units have to be plugged in every night, and you only have to forget once to leave yourself open to the danger of losing stored data the following day. We reasoned that our reps were usually working in areas where new batteries could be obtained easily and the display message would give them ample warning to replace the old set.

"We've found that the batteries usually last us around six to eight weeks, so they're not having to be changed with any great frequency."

In operation, the unit works just like a calculator, responding to keyed input with an appropriate character display. All keys are programmed and labelled to have significance for a beverage salesman with captions like *bottles, cases,* etc., with probably the most frequently used one being "statistics".

The latter displays the accumulation of orders taken through the day, and acts as a personal performance monitor for each representative. The onboard ROM allows lthe salesman to check visually the correctness of entries for both customer and product code through the LED display. Each PDE is loaded with a subset of customer and product data pertinent to that sales territory.

The operator can enter orders, modify or delete any of the previous items, and even combine details together in cases of multiple ordering. Peter Feeney comments on the operation of the units:

"They're very easy to use, and very durable. In fact one of our selection criteria was that they be able to withstand being dropped from shoulder height on to a concrete floor, without affecting their operation.

"They have the capacity to hold at

least one day's orders, so there's usually no need for more than one transmission every 24 hours. In cases of failure in any part of the telecommunications network, we've got two options.

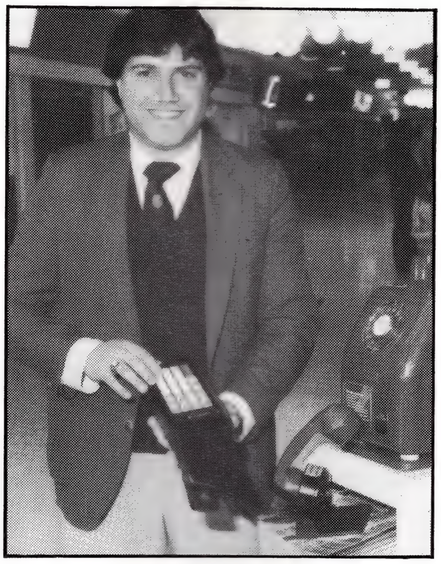
"The salesman can either send his terminal — into the nearest branch office and pick it up the next day, or if one of our TI nodes itself is out of operation, the data can be sent to one of our interstate branches, and sourced from there."

For the actual transmission, the unit is equipped with a single "muff", send-only acoustic coupler that can be operated from any standard telephone, with the use of a clamp and stand that enables the "muff" to be attached to the mouthpiece, even in confined locations The transmission is made at 1200 BPS half duplex, asynchronous in TTY protocol.

Despite the sophistication of the entire method, there is still quite la degree of manual intervention required to make the link work. Peter Feeney elaborates::

"We do have manual modems at the receiving end. Someone actually answers the phone when the salesman calls and monitors the accuracy of received data via a screen while the transmission is made. If there are any problems, there's an opportunity to make the transmission again.

"This manual interface also allows the rep. to pick up any messages left for him, and he's got the reassurance that the data has been correctly received. It's interesting that some of our customers and representatives have become quite used to the idea of these phone hookups for local calls, but they are quite amazed that the data can be sent in the same way over longer distances via STD."



The programming of these units is done in two segments. On the one hand, the product and customer subset appropriate to each salesman is reloaded at the branch office once a fortnight. This ensures that the base data is always current.

The reloading is done by attaching the PDE to a "box" via the modem socket, and downloading the details from TI mini. The entry programs themselves are stored on EPROM's at each of the branches, and can be downloaded in the same way, if any amendments have been made, or if the PDE needs to be reinitialised.

"At this time, we're still getting our mods from BSI in San Diego, but we are developing our own local facilities for ongoing enhancements. There are many people around who are offering services for programming these devices via their ROMs, or you can do the job yourself by working with a standalone micro; doing the development under CP/M, say, and downloading the result into the PDE," Feeney said.

Cadbury Schweppes has adopted an interesting approach to training its salesforce in using these devices. With a large number of people involved, the company was bound to encounter a spectrum of attitudes and aptitudes, but one basic emotion permeated the entire group. The company's technique was to give each representative a one-hour session in the basics of the terminal, before they were allowed to take the units away for practice at their own pace, in their own time.

The devices were loaded with product and customer samples, to simulate a live operation. The reps. then had a return education session to revise what had been assimilated, before being sent out into the field. Peter Feeney comments:

"There was a fair amount of initial fear about the PDEs. People were concerned that they were going to do something wrong which would destroy data already entered, but the units are programmed in such a way that you can't enter a step out of order, and the thing is giving you regular feedback as to whether your operations are valid or not.

"It beeps once if all is well, and three times if there's something wrong. As soon as our people became comfortable with this, they developed confidence in the unit and in their own ability."

"We've got a policy of getting closer to our users, and pushing the idea of computerisation in all its forms and into less traditional areas, like production. We've formalised this with the establishment of a corporate computer group to provide a service to both divisions that is better than they could get elsewhere." ☐

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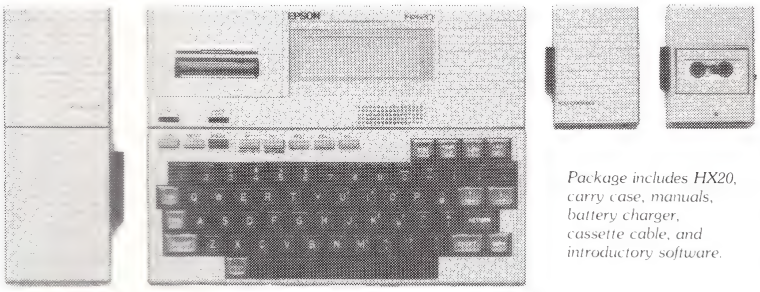

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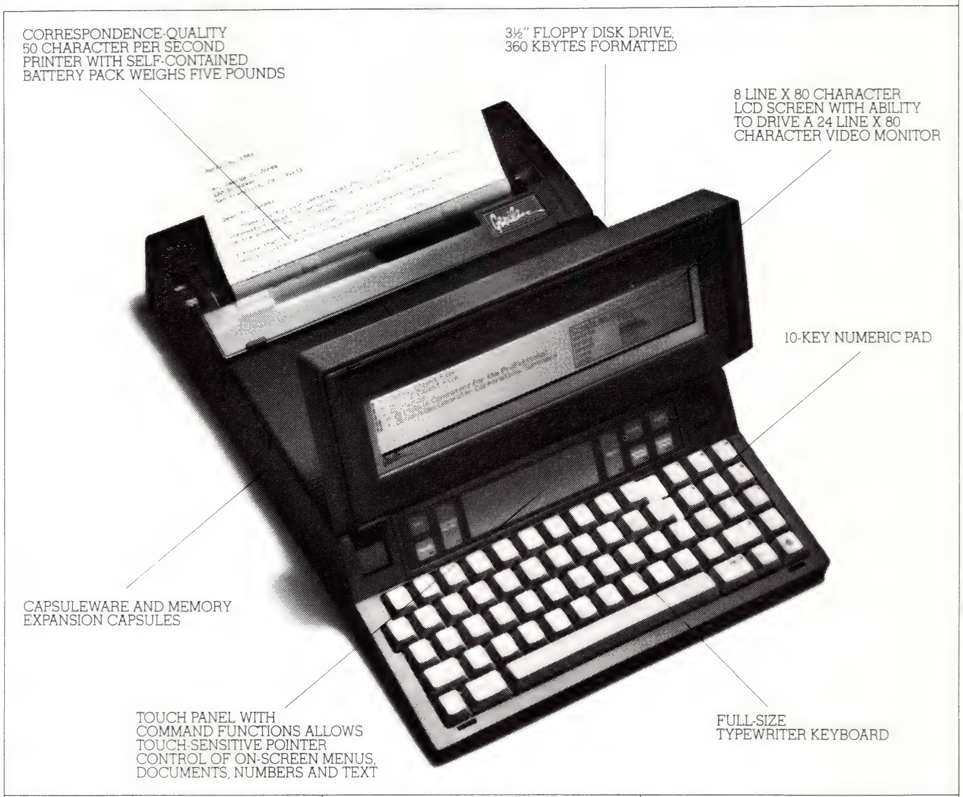
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The complete set of CapsuleWare programs includes CapsuleWord™ word processing, CapsuleCalc™ calculation & analysis, CapsuleOffice™ portable secretary, CapsuleComm™ communications and CapsuleForm™ forms processing.

Secondly, the Gavilan's primary user interface is not the keyboard, but instead, a built-in pressure-sensitive touch panel that not only selects, but executes, commands. With the full capabilities of a mouse, this simple "point and tap" interface all but replaces the keyboard in normal computing operations.

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Transportables for real people

Adam Osborne originally sought to define the term "portable computer" with his then new-direction Osborne I. The ensuing months have seen a most unusual event in the development of language, as commentator after commentator has sought to redefine and subclassify the various computers able to be simply moved from place to place. Tony Smith reports . . .

THE word "transportables" has been used to isolate those like the Osborne I which could hardly be used on your lap in an aeroplane from some newer offerings which could be. Australians are learning to refer to such computers as "Aunty Jacks", a culture dependent illustration of what carrying them for any distance does to the engaged forelimb. The term may find difficulty obtaining international usage.

By pioneering, the Osborne I, and by being first to counter Osborne's most obvious deficiencies, the Kaypro II have become historic products in the story of personal, not just portable computing.

Yes, George, it is almost 1984, and Big Brother has not needed to deliver computers which will follow us everywhere. Adam and Eve (or Non-Linear Systems Inc) have provided computers which we have learnt to carry everywhere ourselves, and which maybe are best called "inescapables".

In Australia, the market acceptance which the two leading inescapables have found may be as much due to the local distribution arrangements as to configuration specifics.

Adam Osborne apart, President Computer group's founder, Tom Cooper has understood as well as anybody the potential for transportables to become the computers real people use. President grabbed Osborne distribution rights early on but, before it could really get its act into place, the booming little US manufacturer's corporate pretentions led it to snatch back those rights in a quite ugly episode.

Having seen the light, Cooper fought for and won rights to the consumer market distribution of Kaypro, with the previously established local affiliate of Non-Linear Systems looking after the OEM market. Thus Kaypro won the Australian consumer market battle while Osborne won the OEM driven vertical markets.

Non-linear Systems Australia's involvement with Davidson accounting software aside, if you see a transportable computer dedicated to a specific application, it is most likely to be an Osborne.

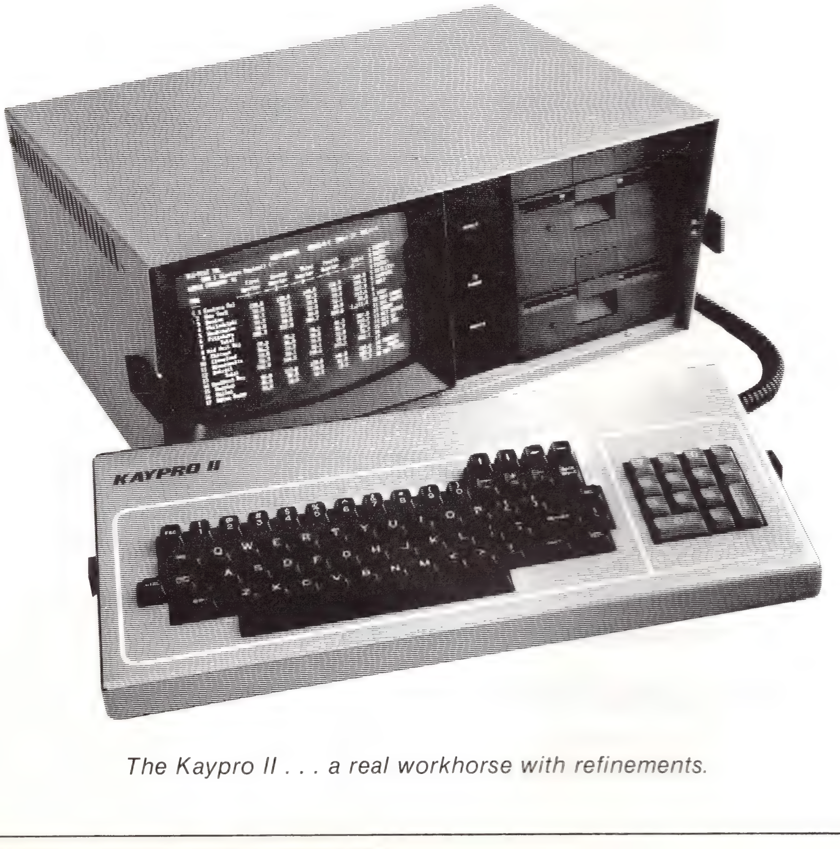
The Victorian coastal town of Lorne boasts the usual bunch of Apples and the like at the school, in private homes, and at one local business. Two other businesses have Osbornes, although they hardly realise it, one a fully packaged accounting system at the hardware store, the other as the heart of Breeze Computer's neat point of sale system which mounts an Osborne and a cash draw in an original chassis. Kaypros only visit at weekends.

While the hardware store owner is particularly thankful for the Osborne enabling him to rediscover spare time, and the Geelong-based Breeze's offering is going like wildfire across southern Victoria at least, neither is particularly interested in portability. The other pillars on which Osborne based his pioneering concept are far more relevant to them.

It is often forgotten that Osborne I featured several innovations in the personal computing field beyond transportability. Its bundled pricing includes two disk drives, a screen and packaged software with a 64K-byte CP/M computer for less than the separate components can be bought in modest OEM quantities. That, plus service and supply advantages, was the reason Breeze just dropped an Osborne on top of its cash drawer, rather than building from scratch.

In contrast, the Australian Foundation for Computer Literacy Ltd was virtually built on Kaypros, notwithstanding the co-editor of the Victorian ACS Bulletin's curious theory that it has more to do with Apples. The foundation is a group of mainly professional people who have learnt to use computers as tools and in so doing have become committed to action on social implications issues.

Its chairman, an accountant who got out of the large corporation scene to



The Kaypro II . . . a real workhorse with refinements.

President will continue to service Osbornes, and is prepared to buy up all available stock in the event of Osborne ceasing local operations. Whatever the case, the Osborne I (above), is bound to be with us for some time yet.

take on contract financial management of mainly professional practices, carries his Kaypro everywhere, purely to use spreadsheets for financial modelling. He is thinking of getting one for his partner to increase his working capacity.

The foundation's secretary was a research fellow in evolutionary biology before he discovered that he could type on a word processor fast enough to make a living doing thesis work for other academics. His Kaypro churns out Wordstar and, more recently, Mailmerge work, for which it is often connected to a printer costing nearly twice the price of the otherwise complete computer.

Some associates of the Foundation prefer the relatively easy to learn Perfect software which is bundled with the Kaypro and an increasing range of other hardware.

With its multiple diskette formats, ability to act as a full screen terminal, and the availability of sophisticated software development tools such as Compass Pascal, Kaypro also does significant business as the computer you buy while you are waiting to get a computer.

The trendy computer stores have generally handled Osborne as an alternative to whatever non-portable PCs were currently in fashion. When Henderson joined Myer Computer and Business Centres, virtually his first action was to add Osborne to the predetermined product range. The much more numerous and far-reaching President group has made Kaypro its flagship.

Most of the individual buyers of these inescapable computers did so because they were both affordable and useful. They look at the superior features of the Otrona Attache and Computer Devices' DOT with envy, but generally have not yet come to terms with the promise of briefcase and smaller portables.

Should the collapse of Osborne prove irreversible, the individual buyers who opted for Kaypro's solidity and obvious improvement on Osborne's weakpoints, against all Adam Osborne's economic arguments, will feel even more comfortable.

They know Non-Linear Systems has delivered its promised higher disk capacity and even hard disk versions, and that the down to earth Australian President group is easier to deal with than Osborne's local corporate offshoot.

They might even know that President will continue to service Osbornes and is prepared to buy up all available stock in the event of Osborne ceasing local operations.

The real people using Kaypros and Osbornes for real work are more than happy to have their own, inescapable Aunty Jacks. ☐

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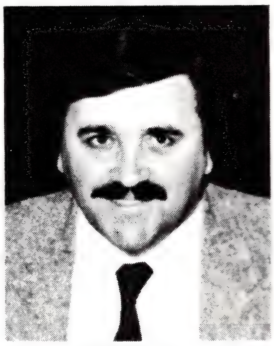

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SETTING THE STANDARD

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HP points the way

By Tony Smith

HEWLETT-PACKARD's reputation for technical excellence is only slightly less recognised than its reputation for doing things its way. The Palo Alto-based company was established in northern California before the Silicon Valley name, its expertise having rubbed off on the infant Apple among many others of the microcomputer boom.

While HP is not as big a force in conventional personal computers as in larger multi-user systems, its 9000, based on five incredibly dense proprietary chips, is a major direction indicator for the future.

Beyond its large selling commercial 3000 series and scientific 1000 series computers, HP is a major instrumentation company as well as being highly regarded for its graphics terminals, plotters and pocket calculators. Its entry into the hand-held portable computer market, the HP-75C borrows more conspicuously from the HP-41 advanced programmable calculator than from any of HP's range of more conventional personal computers.

Visicalc spreadsheets may be viewed on the HP-75C's single-line display, foreground, a video monitor, or on print-print outs.

HP-75C is a collection of powerful features, a couple arguably misconceived, which are very efficiently packaged. Like most other early handheld computers, it has not exactly taken the market by storm.

It was not until some HP salespeople started using it for themselves and discovered some uses it could be put to, that any real sales effort developed.

The hand pull, magnetic strip card reader, can certainly fit into a tiny corner of the quite small 75, but its 1.3K-bytes a card capacity makes it clumsy to use for anything more complex than storing and restoring of very small quantities of data such as parameters or simplistic programs. With the 75's use of 16K onboard and 8K expansion cartridge battery backed up continuous RAM, and space for three plug-in 32K ROM software modules, the magnetic card should be considered at best a minor feature.

The other disappointment was the use of a single line display, although very readable, it limits its uses in totally portable situations.

One important feature, usually reserved for very advanced systems, is the ability to completely redefine the keyboard under software control, with use of a keyboard overlay facilitating packaged software development. But by far its strongest plus comes when the 75 is brought back to home base and plugged very simply into a network which can contain an extensive range of HP peripherals.

The HP Interface Loop (HP-IL) is the company's low-end network developed for the HP-41 programmable calculator, in contrast to the HP-IB (Interface Bus) which networks more demanding equipment. The in-and-out, two-wire HP-IL can connect the 75 to a range of printers and plotters, digital cassètte drive, multimeter, data acquisition/control unit, and several interfaces to other equipment.

A third party supplier can use an HP-IL interface kit to connect its own products, use an acoustic coupler, or connect HP-IL interfaces for: 32-column video screen, RS-232c serial communications, general purpose parallel input/output, HP Series 80 personal computers, and, of course, HP-IB.

Most of the software available from HP for the 75 is in the company's traditional technical fields and vertical markets, but it does have a text formatter and a version of Visicalc which actually can be operated using the single-line display but is much more effective using an HP-IL connected screen.

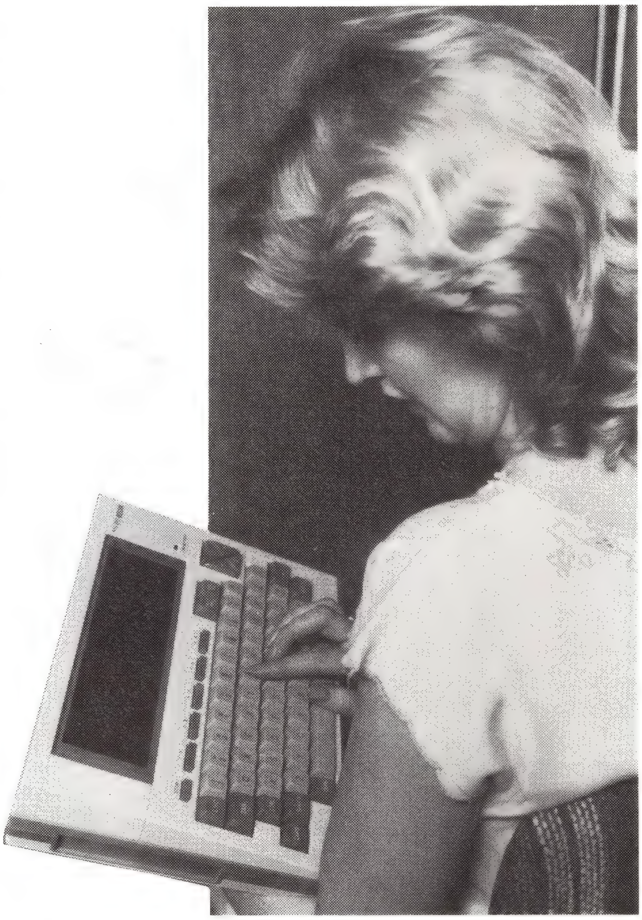
The 75 uses a proprietary 8-bit CMOS processor designed for the Series 80 personal computers. HP's 48K-byte ROM extended Basic operating system allows programs developed on the 75 can be migrated upwards throughout HP's full range of computers with only minor modification to suit more sophisticated environments.

The continuous memory can be broken up into any number of logical files to provide secure storage of data from a number of different programs until it can be used or transferred to some more permanent off-line storage.

While the price of the 75 may look high, the company is quick to compare its maximum 168K-byte total memory space with that available on other computers of comparable price, a comparison that might be more fairly made to a 64K system with two single density floppies where it still stands up reasonably well. □

A new generation of portable microcomputers has arrived on the Australian market with the release of the machines from Tandy, NEC and Olivetti. All the machines are manufactured by Japanese company Kyocera and use the same ROM-based, Microsoft-designed software environment. The machines differ in external appearance and in the features provided. For three machines whose origins are so close it is interesting to see how the packaging and marketing of the computers reflect the corporate attitudes of the various companies, and brand name buyers will have little difficulty deciding between the machines. This review by Ian Webster is based on a month living with the Tandy M100 and brief sessions with the other two models.

Calculators for words win instant acceptance



The NEC 8201 . . . revisions make it the best of the trio.

WEIGHING in at little more than four pounds, the Tandy TRS-80 Model 100 features a full typewriter-like keyboard with function keys and an eight-line by 40 character liquid-crystal display (LCD) screen.

Inside the Model 100 are an 80C85 low-power processor and 8K of battery-powered RAM. Four AA-cell batteries run the computer and a built-in nickel-cadmium battery allows it to retain information when turned off.

Options are available to increase the internal memory of 32K of RAM, but the penalty for adding memory is reduced battery-operation time. Almost 32K of ROM-based software comes with the Model 100, including yet another version of Microsoft's Basic, a simple text processor, software to handle telecommunications and address and appointment-handling programs.

Memory is treated as files, so text and programs are stored in memory. Storing in memory reduces the amount of memory available for programming or word processing.

Centronics-type printer interface, an RS-232 interface, a cassette interface and bar-code reader input are provided. Beneath the LCD display are eight programmable function keys, four cursor-control keys and four dedicated function keys.

Graphics are possible through the use of dedicated graphic characters — mostly foreign letters and a curious set of "game" tokens — and through individual dots on the display. The resolution is 64 dots high by 240 dots wide, making the matrix for an individual character six by eight. Although not exactly high-resolution presentation, it is easily readable.

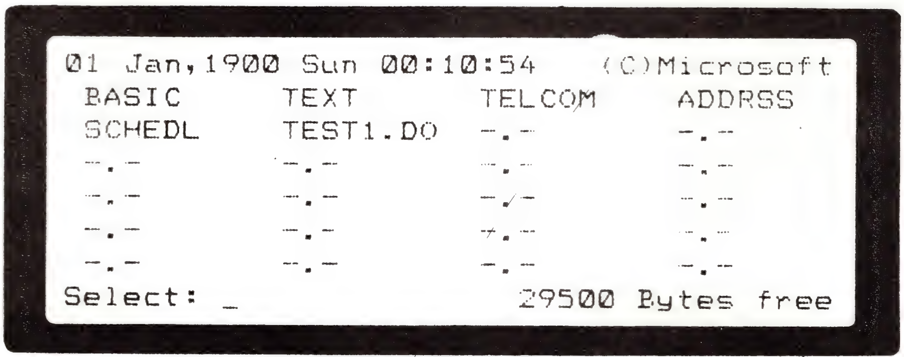
The Model 100 is no speed demon. The 80C85 processor runs slower (2.4 Mhz) than a typical Z80-based computer, so some might find processing speed leaves a little to be desired.

The LCD is slow to update its display. I can easily out-type it, and then have to wait for it to catch up to me so I can see what I wrote.

Scrolling through large files is agonisingly slow for anyone used to memory-mapped video displays. The slow scrolling rate has also reportedly caused data loss during high-speed data transfers between the machine and a host computer.

The keyboard has a soft touch and is very flat, making it difficult to use the system for extended periods of typing. The function keys are small but are easy to use with practice.

The memory allocation scheme is



```
01 Jan,1900 Sun 00:10:54    (C)Microsoft
 BASIC       TEXT        TELCOM     ADDRSS
 SCHEDL      TEST1.DO    -.-        -.-
 -.-         -.-         -.-        -.-
 -.-         -.-         -.-        -.-
 -.-         -.-         -.-        -.-
 -.-         -.-         -.-        -.-
Select: _                29500 Bytes free
```

Screen display showing files and programs available.

very efficient. Up to 24 files are supported at once, the machine usually containing several utility programs such as a formatter for the text editor as well as current text and data files. File overhead is minimal and a one byte pointer is the only memory needed to establish a file.

The preservation of memory is important. Users must decide between the amount of time the batteries last and how much memory is available. The manual says an 8K machine will last 20 hours on battery and retain information when powered down for up to 30 days. A 32K machine keeps information in the power-off state for only eight days.

The Model 100 is a simple machine, so you would expect it to be simple to use. For the most part, it is.

The software that comes in ROM with the Model 100 was designed and coded by Microsoft. It appears it took the standard extended Basic and twisted it here and there to provide some new abilities. The original Microsoft Basic, found in the TRS-80 Model III, is an extensive, easy-to-use dialect of the language, but the Model 100 version has some idiosyncracies that took some effort to learn.

Fortunately, the editing commands are the same for word processing, Basic programming and the Model 100's other software. This makes learning simple and helps make the computer easy to use.

The Model 100's documentation consists of an 8½in x 11in spiral-bound users' manual and a pocket-size, quick-reference guide. Although it contains no tutorials, it does supply explanations of Basic commands. There is an index.

The emphasis is on giving computer novices step-by-step explanations, and nothing about any functions is left to the imagination.

Tandy makes a habit of not providing system-level documentation for its systems, and the M100 is no exception. Programmers who want to understand how the machine works will have to improvise or get access to the service manual from a friendly Tandy retailer.

The inside of the machine is one of the cleanest-looking designs I've seen in a long time. While there are several proprietary parts, the care evident in their design and execution leaves me little doubt this will be a hardy, easily serviced machine.

The Tandy M100 will be available from all Tandy stores that sell computers, and will be favorably received by their customer base.

The Olivetti M10 implementation of the system is almost identical internally. The main differences are a new case that supports a hinged LCD display.

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The Tandy TRS-80 Model 100 . . . push to more accessible product line.

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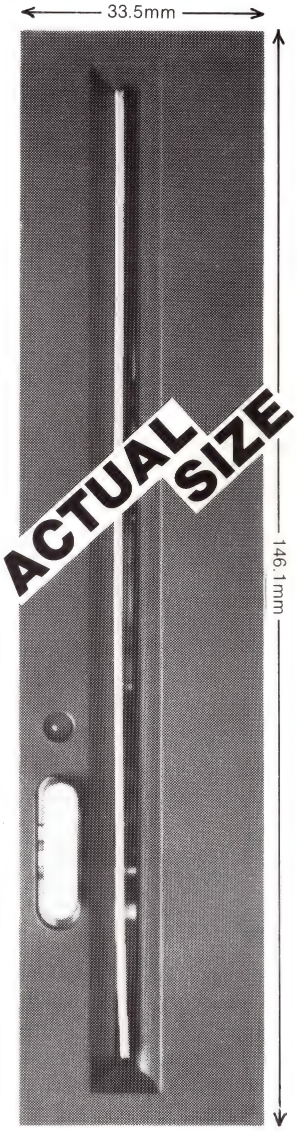

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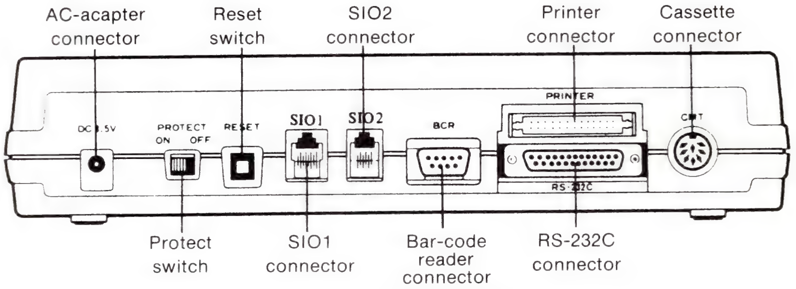


The back of the NEC 8201.

The back of the Tandy TRS-80 Model 100.

adjust the tilt of the whole unit to get a good screen viewing angle. The LCD unit uses a magnetic catch when flat and two wire springs that look like they have been taken from a mousetrap to support the screen tilt.

The keyboard and function key layout are identical to the Tandy, and the layout of the peripheral connectors is almost identical. The bottom of the case is slightly different, and several trapdoors are strategically located to provide to the system expansion bus and add-on memory socket.

While the tiltable LCD display is a major improvement, it feels fragile, and as the machine was labelled sample 16, I would expect the tilt mechanism will be redesigned to make this desirable feature strong enough to survive the pounding portable computers receive.

Expect the Olivetti M10 to be available wherever their typewriters are sold. With competitive pricing, this distribution network will ensure the machine sells well.

The NEC 8201 is slightly more advanced than the other two implementations. The top of the case has been tilted to try to provide a better angle of attack to the keyboard and view of the screen. The function keys have been reduced to four and the cursor keys have been arranged in a diamond.

The case is better constructed and feels as though it could take rougher handling than the others. The main differences are the memory structure of the machine and the packaging.

NEC realised removable mass storage was necessary if these portables are to achieve their full potential. With a redesign of the machine's motherboard, they made room for 64K or CMOS RAM inside the case and added a cartridge slot on the side of the case.

Memory in the NEC 8201 is organised into independent 32K blocks — two blocks inside the machine and another in a battery-backed plug-in cartridge. The system can be switched between banks, each capable of maintaining a complete set of files.

Files can also be moved between banks. This enables data and files to be moved easily between machines and machines reconfigured with different programs.

This enhancement will ensure the NEC implementation is used extensively in vertical market applications. The packaging of the machine is also up to the careful, considered standard of NEC's other products.

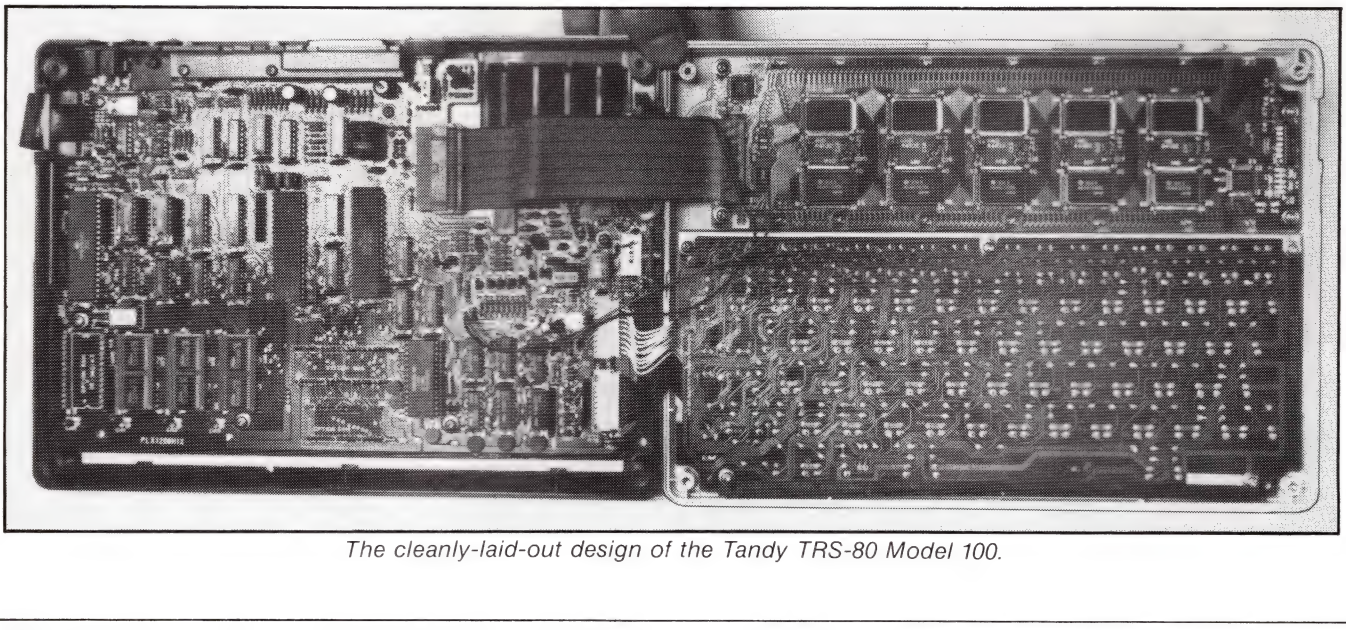
A user manual and reference manual are supplied with the machine and both provide an adequate introduction. NEC also supplies a cassette tape containing 25 programs, including applications, entertainment and system utilities such as bar-code drivers.

NEC is selling the machine in lots of 200, so the computer is likely only to be available from the larger retail outlets.

These are important machines that will find a myriad of applications. For many people interested in personal computing, they are the first computer that makes as much sense as a calculator.

The NEC 8201, priced a little below the Tandy M100, is a best buy, but both the Tandy M100 and the Olivetti M10 will have their admirers. With consumer products like these, availability is often the major influence on buyers.

- *Opposite page: How the US-Japanese link established a three-way marketing initiative.*



The cleanly-laid-out design of the Tandy TRS-80 Model 100.

US-Japanese pact's coup

SUDDENLY, three months ago, a new generation of microcomputer appeared on the market. In an industry noted for its pre-launch product releases and a vigorous press always ready to extoll the virtues of anything that looks different, there hadn't been a whisper.

Overnight the superceded generation of portables became transportables. We had known about a new generation of high-powered LCD technology machines from Grid, Gavilan, Sharp and Dulmont, but suddenly, three of the world's leading business equipment and computer companies released low-cost, LCD-based portable computer systems.

The appearance of these machines, which should be called mid-Pacific machines because they are hybrid Japanese-American machines and represent the beginnings of a style of design, manufacture and marketing that will carry the industry through to the end of the decade. The players in the development of the first personal calculators using words were Kay Nishi, head of Japanese publisher ASCII, Bill Gates, Mr Microsoft himself, who formed a partnership between ASCII and Microsoft to pursue his conviction that the Japanese could build the type of computer he saw as the future of personal computing, Tandy, the Texas retailer anxious to make its product line more accessible, and Kyocera, a Japanese electronics manufacturer.

It appears Gates organised the software, Kyocera built the machine for Tandy, Nishi managed the Japanese end and Tandy's Jon Shirley, now Microsoft boss, managed the US end. The design was a joint effort. No sooner had Tandy pushed its M100 on to the market than Olivetti announced the M10, a slightly redesigned model off the Kyocera production line and NEC released the 820, perhaps best called a revised edition, apparently at the request of NEC which wanted to change some of its features.
features.

The significance of the machine is that it was instantly accepted by the market.

A whole new generation of computer equipment was accepted and absorbed at a time when the publicity machines for other conceptual products like Apple's Lisa and Visicorp's Vision have been banging along for a year without similar success.

These machines illustrate the complex manufacturing associations that have been developing between the US industry and the Japanese, and are a concrete realisation of the personal computing environments US software designers will pursue for the rest of this decade. ☐

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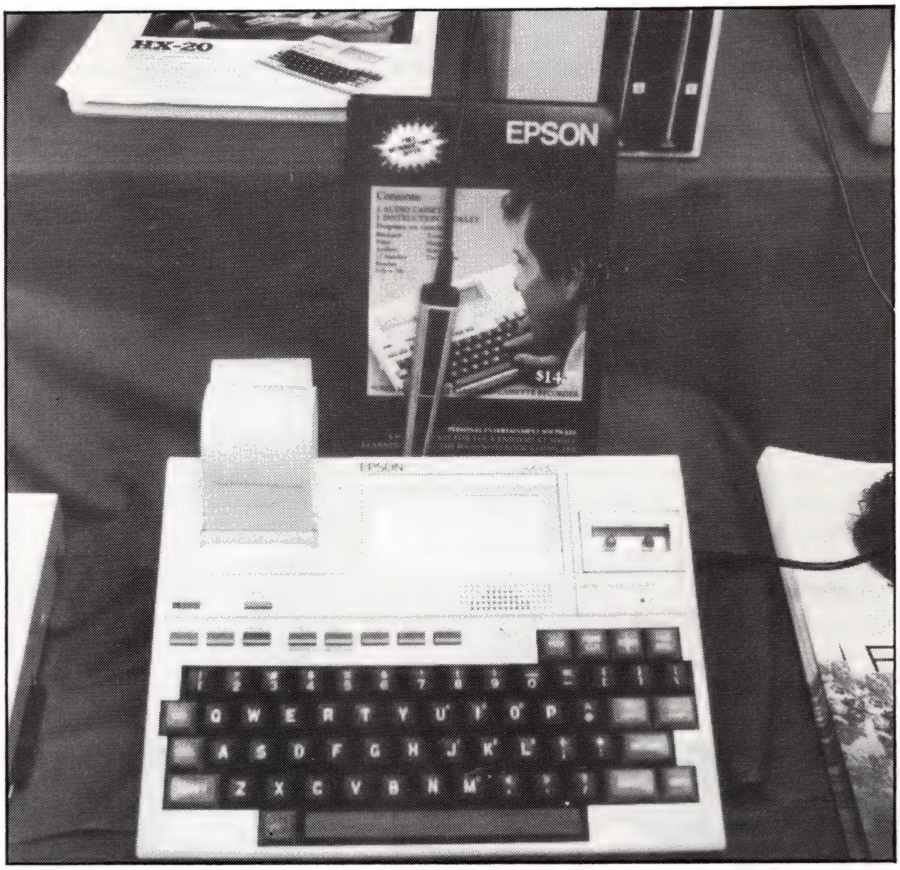
Power for users on move

The pioneering Epson HX20's advanced operating system and hardware features offer a completely new style of programming. This is a programmer's opinion of the handheld Epson.


The Epson HX20 . . . powerful computer.

THE Epson HX 20 is a powerful and innovative handheld computer, which first emerged on the market about the middle of last year as a harbinger to the present spate of portable computers. Unlike previous portables, which were either transportable desktop models or glorified calculators, the battery-powered HX20, with inbuilt keyboard, screen, printer and microcassette, is a true portable computer system.

The continual shrinking of electronic components leaves microcomputer manufacturers with two options — either shrink the whole unit accordingly, or cram more features into the same-sized unit. Fortunately, Epson has chosen the latter option, realising a standard typewriter keyboard and a readable screen are the minimum limits in size reduction for serious portable systems.

Serious systems are those intended for frequent operation by professional users, rather than video game players or gimmick freaks. Serious features within the HX20's A4-sized case include a real-time clock/calendar, 16k non-volatile CMOS memory, extensive I/O capabilities — including a flexible RS232C, high-speed serial, expansion and bar-code interfaces — and a powerful 32K operating system including enhanced Microsoft Basic.

Besides pioneering the portable market, the HX20's advanced operating system and hardware features have pioneered a completely new style of programming. The Basic memory space consists of not one, but five program areas, allowing up to five separate Basic programs to be stored simultaneously within the CMOS RAM, which retains its contents when the power is switched off.

There is also memory space for machine code programs and for RAM data files, which are accessible by any of the Basic programs. All these memory areas are dynamic: their sizes can be changed by the programmer to create the most efficient software environment.

Each program area, labelled P1 to P5, may also be given a title, which protects it from accidental erasure, and which appears in the initial menu presented when the HX20 is switched on. It is also a simple matter to program the HX20 to perform a specific sequence of commands each time it is switched on. These features, along with the 10 programmable function keys and comprehensive error-handling, add up to customisable and, dare I say it, user-friendly system.

The Epson HX20 is directed at a new and lucrative section of the market — the businessman or travelling rep who does most of his work away from a desktop or power point, the professional or consultant who values personal contact above computer contact, or the converted user looking for a second computer.

As an example of exploiting the HX20's unique software environment, let us consider one such potential user — the used-car dealer. The RAM file area could consist of records of each car in the yard, containing price, model, year, licence expiry date and other relevant information.

The first program area, P1:, could contain simple utilities to delete, add or modify these records as cars are bought, sold or discounted. The program in P2: could print out the list of current stock, perhaps sorted by price, year, licence expiry date, or color, to assist potential customers with their selection or to help in stocktaking. P3: could contain a program to estimate a reasonable price on a trade-in, while the program in P4: could accurately calculate and print out a quotation on a vehicle, incorporating trade-in, deposit, stamp duty, transfer fee and monthly payment. Customers often trust a computer printout more than the spoken word of a salesman.

This would still leave our used-car dealer with a spare program area, which he could either leave as a spare scratchpad area for rough calculations, or fill in with further application programs, such as hire-purchase agreements or servicing schedules. He could even use it to play Space Invaders while waiting for the next customer.

This example is a base-level application, attainable with the standard HX20 package, but there are almost unlimited expansion opportunities. The used-car dealer could be part of a large network, or have a large sales team, and by using the Epson disk drives, modem, or RS232C networking capabilities of the HX20, he could be updating a much larger database. The intrinsic hardware and software features of the Epson HX20 reflect the general trend away from cumbersome centralised processing towards distributed intelligent networks and remote processing.

With so many practical and ergonomic features, the Epson HX20 has the potential to become an ideal user's computer, but this potential is hampered, as usual, by a lack of good applications software. So at the moment, the HX20 is simply a good programmer's computer, and this seems to be the main selling point for retailers.

An ideal opportunity exists for local programmers, but whether they take up the challenge is another matter. British software house, Foss, has produced a word-processing package, Correspondent, a mini-spreadsheet, Ecalc, and a time-management package, but these have yet to reach our shores.

Whether the Epson HX20 follows in the footsteps of the enormously successful MX80 series of printers, or whether it falls by the wayside, as so many innovative but badly supported systems have done in the past, remains to be seen.

> *'Since technological evolution proceeds at a much faster rate than human evolution, it is computers which must change to suit people, and not vice versa.'*

With the advent of portable computers, the limits of miniaturisation have in many respects been reached. Further internal reduction will always be possible, but the physical limitations of external I/O devices are directly influenced by the physical limitations of human beings.

For as long as the keyboard remains the most favored input device, there is no point building them any smaller than the human hand could cope with. This is the reason ZX-style membrane keyboards will never gain wide acceptance from business users, where large volumes of data entry are required.

In other words, the standard QWERTY keyboard provides the size limit for serious users. Similarly, the minimum extremes for printouts and video screen sizes are determined by the capabilities of the human eye, which Adam Osborne may well have pushed to the limit.

Therefore, while it may one day be possible to have a mainframe in a wristwatch, such a device would be totally impractical, unless humans had developed tiny fingers and very sharp eyes to suit. Since technological evolution proceeds at a much faster rate than human evolution, it is computers that must change to suit people, and not vice versa.

Of course, when superior forms of human-computer communications are fully developed, such as speech recognition and output, the size reduction race will be on again . . . ☐

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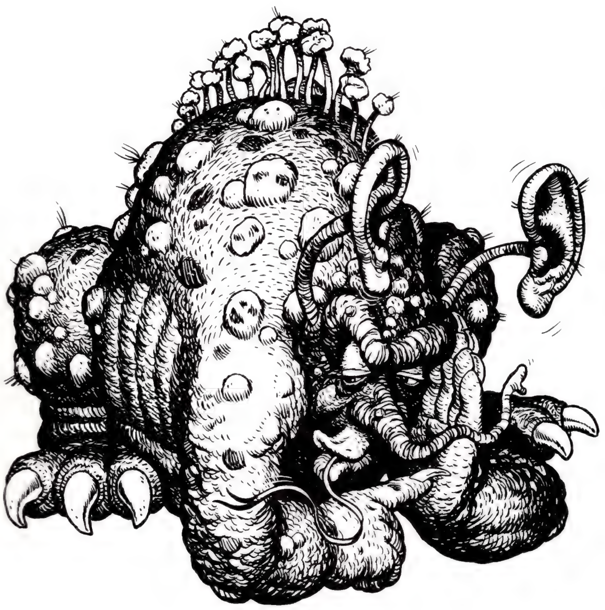

Mayday! Mayday! Mayhem on board!

Sometime in January 1986, in a thunderstorm, a Boeing 727 from Melbourne is on its final landing approach to Sydney's Mascot Airport. In the business-class section, 10 busy executives are working on memos and electronic spreadsheets on lap-size portable computers. Suddenly, the pilot realises that both his instrument landing system and glide slope navigational receivers have been jammed by computers at a critical time . . .

LAST YEAR, Adam Osborne, the man who introduced the first portable computer, asserted that a true portable computer was one that could fit under an aircraft seat.

Mike Markkula of Apple Computer responded that he considered a portable computer to be one that he could actually *use* on a plane.

Osborne may be the one who's right.

Is it safe to use a portable on a plane? Despite the proliferation of lap-size computers and their increasingly widespread use on commercial aircraft, the answer is that it may not be.

A variety of sources in the US Federal government and the computer and airline industries have said that there is not enough evidence on the effect that portable computers have on aircraft navigational and communications equipment. More testing is needed before they are judged safe, according to these sources.

An "InfoWorld" investigation has revealed:

- At least one major US airline, Eastern Airlines, has banned the use of portable computers on its flights. Smaller commuter airlines now also prohibit the use of portable computers, and other major air carriers are investigating the situation.
- Eleven years ago, the Federal Aviation Administration (FAA) introduced for comment and then three years later withdrew regulations which would have specifically **permitted** the use of portable electronic calculators on planes. The withdrawal of the proposed regulation came after a number of organisations criticised the new rule because of suspected and real problems arising from radio interference.
- An engineer at one major portable-computer manufacturer said that a scan that he completed of his company's computer revealed spikes at key frequencies "smack dab in the middle" of the range reserved for aircraft navigational radio equipment.
- Knowledgable RFI engineers have reported that the FCC "Class B" interference standard is only 15 to 30 decibels apart from the signals from key VOR navigational transmitters at critical distances from the aircraft. The engineers are worried that the margin of tolerance may be too close for safety.
- A spokesman for the US Air Lines Pilots Association (ALPA) states that his organisation is concerned about the problem and is particularly concerned about possible electronic interference with a new generation of highly computerised commercial aircraft, the Boeing 767, 757 and Airbus 300, (These new aircraft have been dubbed Pac-Man planes because most of the pilot's instruments have been replaced with CRTs.)
- At the same time the use of portables in planes is being scrutinised, airlines are seriously looking at installing video games in seat-back food-service trays as a potential money-making device. Two such units are already being manufactured for airlines.

Spokesmen for portable-computer companies admit that no personal computers are currently specifically licensed for use on commercial planes. Some experts worry that inconsistent regulations and pressure from an airline industry that wishes to attract more business-oriented passengers may lead to a relaxation of critical standards.

One technical specialist in an FAA field office in Washington, DC, adds: "If you're flying in a small aircraft without any avionics (aviation electronics), then you couldn't care less; but you're in a big commercial aircraft with sophisticated avionics, then you're conceivably running a risk."

According to John Mazor, an ALPA spokesman: "We have not had enough experience with the newest generation of aircraft, such as the Boeing 767, 757 and the Airbus 300, which make extensive use of CRTs and digital electronics. We are aware of the problem and we will be watching the area closely."

Portable-computer manufacturers are concerned as well. Dexter Francis, a private pilot and design engineer at Osborne Computer in Hayward, California, said he had tested one of the company's Osborne 1 computers, which had not yet been certified for use on aircraft, and found that it was emitting interference in the same radio-frequency range as that used by the plane's key ILS navigational equipment.

Francis says portable computers can potentially be a serious source of radio-frequency interference (RFI).

"Within the computer circuitry, there are digital signals running on all the traces on the printed circuit board that function as tiny antennas," he says. "Essentially a computer functions as a tiny RF signal antenna.

"Even though the Osborne computer passes the FCC Class B certification, if I get close enough to a VOR (very high-frequency omni-directional range) receiver on a plane, I'm going to scramble its eggs," Francis says.

According to Ed Juge, one of the Radio Shack executives who oversaw the introduction of the Model 100: "Nobody is ready to make a blanket statement" about the safety of portables on planes. Juge says the airlines told Radio Shack they would consider ruling on the safety of the Model 100.

A spokesman for the Australian Department of Aviation said that it had been monitoring the use of portable electrical products for the past decade. At the request of the airlines it had started to test and approve electronic calculators, but the rate of product change had made this practice unmanagable. A set of general guidelines had been established by the department to assist airlines.

Low-powered electrical devices are generally allowed to be used, but a blanket ban on the use of video equipment had been imposed by all airlines. The final decision is always up to the captain of the aircraft and the cabin crew, the spokesman said. ☐

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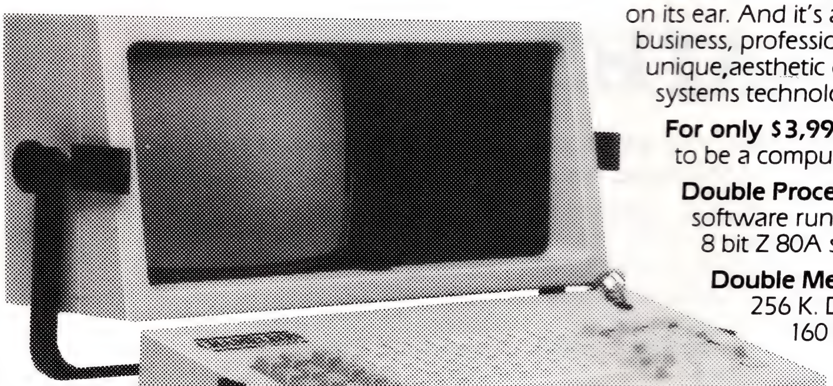

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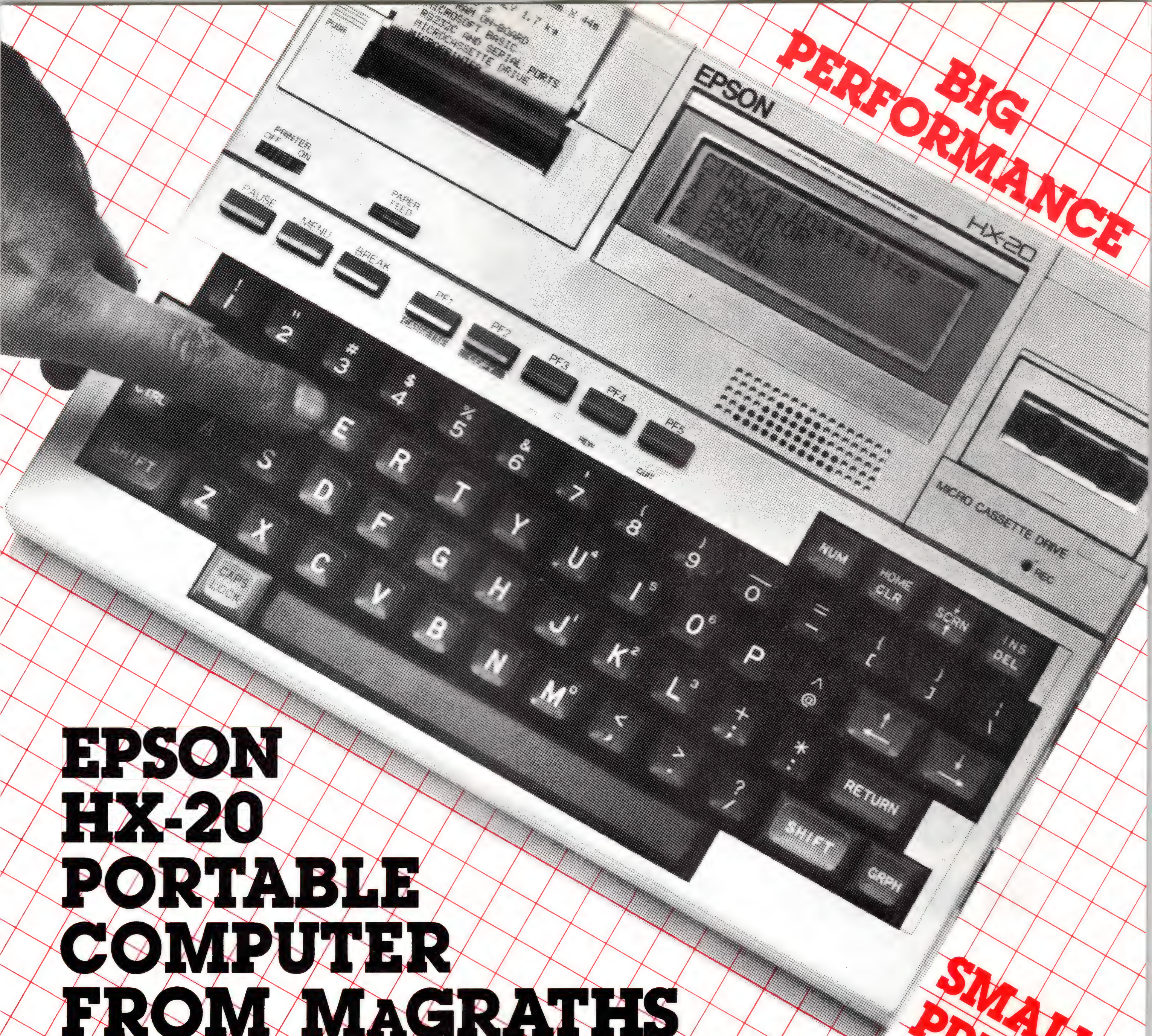

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SPECIFICATIONS:

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System Bus	16-bit address bus; 8-bit data bus and control lines, 40-pin connector.
ROM Cartridge/ Microcassette Interface	I/0 port with 3 input, 6 output lines.
Power Supply	NiCd batteries, internal; Sub C type, 1200 mA/H capacity; 40 hour capacity running BASIC (less depending on use of RS-232C port, printer or optional microcassette).

Recharge	Full charge within 8 hours.
	Physical Characteristics
Size	29.0 x 21.5 x 4.4 cm. (11.4" x 8.5" x 1.7")
Weight	Approx. 1.7 kg (3 lbs 13 oz).
Options	
Expansion Unit	8KB RAM plus 24KB ROM or 16KB RAM plus 16KB ROM. Total expansion is 32KB.
Microcassette	Uses standard microcassette tapes.
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A brilliant DOT on a cluttered horizon

There are good portables . . . and there are excellent portables. After four months behind a Computer Devices' DOT, Tony Smith could find only a sprinkling of minor faults. He says excellence takes on a new dimension.

HAVING had one of Computer Devices Inc's DOT portable MS-DOS machines for four months before writing this review, I have come to rely on it for most of my journalistic work and quite a bit of programming. Of the machines available to me, it was the only one with GW-Basic language, so tended to be used for programming as a first priority.

During that period the only things, other than reviews, I used other computers for were: letter-quality printing and mail merging on a Kaypro because I had easier access to the required printing equipment using that workhorse, some fancy document preparation on Apple's Lisa and the occasional computer game on the old Apple II. DOT clearly has become my preferred choice for quite a range of applications.

Computer Devices Inc (CDI) is in Burlington, Massachusettes, America's second high-technology belt, after Silicon Valley, California. CDI has been a supplier of compact portable terminal printer systems since 1969, and underwent a major expansion to take on DOT.

DOT is distributed in Australia by Radaro Computer Devices, a venture founded by two relative newcomers to the computer industry, Melbourne businessmen Frank Windmiller and David Greengrass. They have been joined in the venture by well-known micro dealer Paul Marks.

Marks entered the industry with Victorian registration of the Computerland name and importing Apples via Hong Kong — ventures which were quite lucrative until the parent Computerland and Apple companies found ways of honoring their preceding allocation of Australian rights to Rudi Hoess.

As Delta Semiconductor, Marks brought the Hitachi Peach to Australia and achieved considerably better market penetration than that Japanese micro deserved as a less than competitive product. With DOT, Marks looks like he has both the hardware and an uncontested segment in which to build a reputation as a major industry figure.

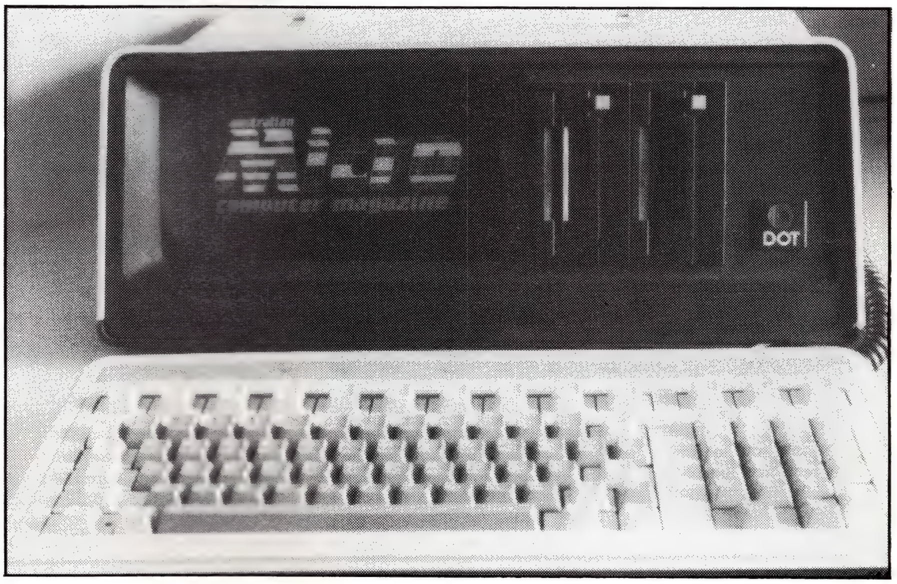
The usefulness of any computer hardware is determined more and more by the available software, and CDI has opted for the safest possible route in that minefield. It has established a close relationship with software leader Microsoft, virtually building DOT to use MS-DOS, Multiplan and GW-Basic.

But CDI has not stopped there, having added two acclaimed word processors and a very interesting set of application tools from Datamension Corp, of Illinois.

Features

While being built on the quite conventional foundations of an Intel 8088 processor, essential to create an MS-DOS environment, and the various parts required in any computer system, it is DOT's combination of sophisticated components that gives it a special market niche. CDI has not skimped on component costs and has built in a number of well-engineered features, including:

- A 160 char/sec bidirectional thermal printer, soft selectable to 80 or 132 char/line, and able to dump bit-mapped screen graphics.
- The use of detachable carrying case and keyboard, in contrast to the traditional style of portables in which the keyboard is used to seal the case, enables the working DOT to appear as a neat desktop unit.
- The use of Sony 3.5in micro floppy drives provides easier packaging, greater media reliability and security, and considerably higher speed than traditional 5.25in floppies.
- As well as standard asynchronous communications, DOT's two ports are software configurable to support IBM 3270 and 3780 communications modes, the latter able to be used for direct file to file transfer between remote DOTS.
- The 9in diagonal monochrome screen has surprising resolution, its low-profile layout providing screen which is twice as wide as it is high, and thus offering a variety of interesting display modes. The hardware design allows graphics resolution up to 1056 pixels horizontally and 254 lines, although only the IBM PC compatible 640 by 200 format is fully supported in current versions. The operator can choose between four text screen formats from the very clear 80 by 16 to 132 by 25 for spreadsheets, etc.
- A special configuration mode can be switched to by simply pressing ALT ESC to enable communications port and screen format parameters to be altered without disrupting the task at hand. The configuration parameters are stored in battery backed up static RAM.



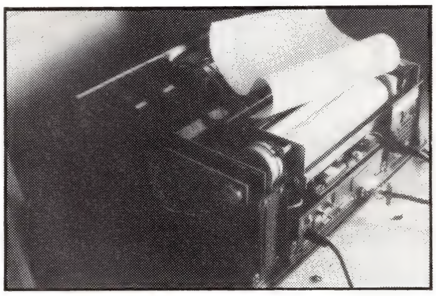
The DOT portable . . . new dimensions in excellence.

- ■ The keyboard's numberic pad is set up in four-function calculator format and doubles as a cursor movement pad for which the arrows form a true diamond.

The main circuit board fits in virtually all required features, without a need to utilise the two IBM PC-bus compatible expansion slots during the whole four months. Among the main on-board features and options are: up to 256K-bytes RAM, 24K-bytes user ROM (in addition to the 40K system ROM), optional Intel 8087 maths coprocessor and battery backup for clock/calendar and configuration RAM.

Nit picking

After four months heavy use of DOT the only problems that could be identified with the hardware and system software would have to be classed as minor, and about half of them related to fine details of some of DOT's desirable innovations. For the record those that were noticed were:



The DOT stripped down.

■ Access to the printer mechanism to clear two paper jams required the case to be unscrewed.

■ The printer width selected is determined by the screen width (in characters) of the most recently dumped screen and is automatically set to 132 when dumping any graphics screen, even those like the 640 by 200 pixel IBM PC-compatible mode which should dump 80 wide.

■ That method of mode selection causes vertical elongation of shapes when such a graphics screen is dumped.

■ The power cord winds around a special molding inside the carrying case, but when the smaller 110-volt wall plug is replaced by a round one suitable for Australian sockets, it has to be fitted in a different position to that given in the instructions so the case can close properly.

■ As in most other units with a detachable keyboard, the coiled connecting cable plugs in at the back of the main unit rather than the more sensible minority which have bothered to position their keyboard connectors in the front.

■ The business preoccupation of DOT's designers shows through its overlooking of one important factor for home use, radio frequency emission. The level is far too high for its use in a block of flats with TV watching neighbors and it has a disastrous effect on even FM radio reception in the fringe areas where its portability often takes it.

■ Similarly, the power-regulation circuitry was unable to completely eliminate the noise generated by an old fridge turning on and off on the same domestic circuit.

Software

While not being heavily into software in their own right, the CDI people have certainly recognised the importance of software by assembling a vast range of tools which they are OEMing and supporting on DOT. While the Microsoft range is the cornerstone of its offerings, CDI has not hesitated to take on even potentially competitive products from other suppliers.

Microsoft's MS-DOS and MBasic interpreter come as standard with DOT, GW-Basic and Multiplan being optional

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extras. Other software from that company includes Basic, Pascal, Cobol and Fortran compilers and a macro assembler.

As a stronger alternative to Microsoft Pascal, Network Consulting, of Vancouver, has supplied a DOT version of its UCSD P-code operating system, the development environment for the important integrated package Context-MBA, and an increasing amount of other software. CDI supports the attractive and economical Volkswriter word processor which was especially developed by Lifetree Software for the 16-bit MS-DOS environment.

Although not yet available from Australian MicroPro software distributor Imagineering, 3.5in disk versions of MicroPro's Wordstar suitable for DOT are obtainable from US sources and can be imported directly. Alternately, that durable de factor standard word processor, which is still just an adaption of the original 8-bit product, can be bought locally for the IBM PC, and copied to a 3.5in disk by a DOT dealer, provided the licensed software is only run on one machine.

As a stronger alternative to Microsoft Pascal, CDI has obtained Network Consulting of Vancouver's UCSD P-code operating system which provides the development environment for the important integrated package Context-MBA, and an increasing amount of other software.

Initially, CDI supported the attractive and economical Volkswriter word processor which was especially developed by Lifetree Software for the 16-bit MS-DOS environment.

But CDI's pragmatism soon showed through as it obtained rights to supply MicroPro's Wordstar, the industry's durable de facto standard which is still just an adaptation of the original 8-bit product.

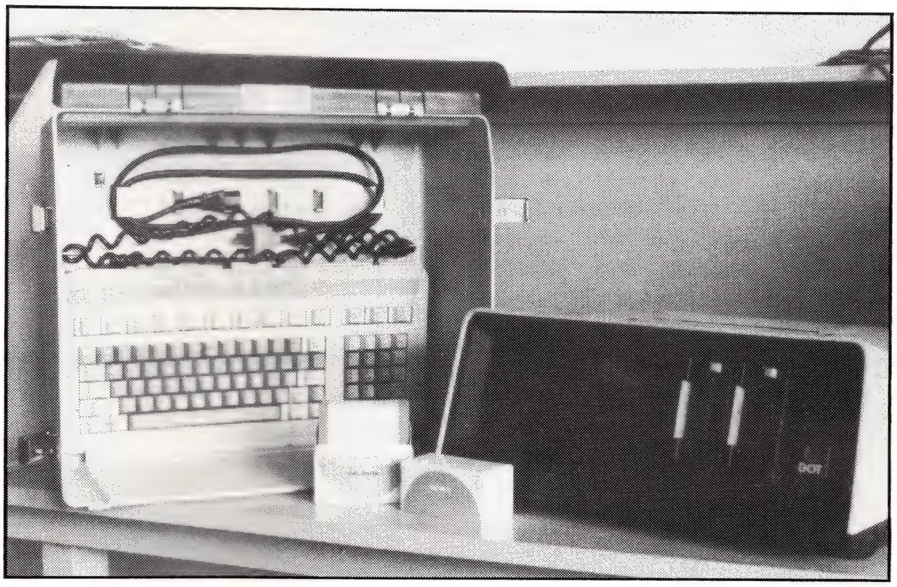
The four Datamension Corp packages for DOT provide a set of exceptional application-oriented tools, including:

■ A critical path package, project manager.

■ Time manager for scheduling and time costing, records manager.

■ Report manager, a three-dimensional spreadsheet with pages in addition to the traditional columns and lines, which can be considered as a data cube to be viewed from any direction.

A data link facility provides means of moving selected data between related Manager series programs, although it does demand a fair bit of physical diskette handling reminiscent of the logical data manipulation provided by the Apple Lisa clipboard facility.



How the keyboard fits into the case.

The accounting packages which Radaro prefers to supply for DOT are from Electronic Business Systems (EBS). The EBS software consists of a small number of executable modules, tailored by a large configuration file to meet individual requirements. For instance, debtors and creditors suites are exactly the same programs.

Custom versions for specific industries can be quickly generated by changes to the configuration file.

In addition to EBS, various conventional accounting packages are available from Timberline Systems in the US, Compact in Sydney and HiSoft in Melbourne.

The availability of HiSoft's Hifinance packages, which were converted across from their IBM PC versions, re-established an earlier business link of Marks', the original versions of HiSoft's products having played a major part in those sales that the Hitachi Peach did generate.

Two key communications software packages developed by CDI are a 3270 Software Emulator and a 3780 Work—station Emulator, both of which are more expensive than any of the other software packages supplied for DOT. But the standard machine also has an in-built capability to act as a dumb terminal, using its first communications port and an operating mode which must be selected from the system start-up menu.

While DOT has been solidly based on MS-DOS, in many ways it gives an even stronger impression of being first and foremost a GW-Basic machine.

Extra software potentially is available, copyright restrictions permitting, by down-loading files directly from an IBM PC. That facility requires programs for DOT and the PC plus a connecting cable.

It is offered by Radaro as a service, and can also be used for moving data files in either direction between the two machines. The only significant frustration with the software was the limited use it made of DOT's impressive graphics and screen-formatting capabilities.

Undoubtably, those limitations will ease as software developers get used to having such facilities available.

Set up

There would be a serious problem for any portable computer if it scored poorly on set up. Even with the separate carrying case, DOT is on a par with other good transportables. The in-built printer, soft communications configuration and use of 3.5in floppies give it three big positives which far outweight any negatives that might be dreamed up.

Ease of use

The same strengths apply as for set up, with one further big plus — software. While it might not be a Lisa, GW-Basic on the DOT provides by far the most effective environment for specialised (i.e., not covered by a 4th-generation language) applications development that I have encountered. Add to that a wide range of useful and widely used application tools, languages, etc.

Performance

It is becoming well known that 3.5in diskettes can out-perform the 5.25in variety for sheer speed. It is worth noting that Hewlett-Packard only push the smaller size with their personals, and that Apple's Macintosh, the cheapie follow-up to Lisa, is reputedly faster for just that reason.

Documentation

First the good news. All manuals for software products supported by CDI are both comprehensive and neatly packaged in A5-size spiral binders.

In contrast, the general system documentation prepared by CDI seems to have missed the level of the people to whom DOT could be the most use. Certainly, it is neatly packaged to match, but simply does not give much of the hard information necessary to push the machine close to its capabilities.

Servicability

While not falling apart at the drop of a clip like a DEC Rainbow, in each case it requires only four screws to be undone to fully open the main unit or the keyboard.

Summary

My first impression of DOT was as a charismatic little fellow with a magnetic attraction comparable only to old faithful Apple II. Four months later, nothing has changed, except that GW-Basic rapidly is proving to be as attractive as the machine it runs on. There is simply no feature of DOT which is off-putting or worse than a minor annoyance. ☐

australian **Micro** computer magazine
Hardware Report Card

DOT PC

	Poor	Fair	Good	Excellent
Setup	☐	☐	☐	☑
Ease of Use	☐	☐	☐	☑
Performance	☐	☐	☐	☑
Documentation	☐	☐	☑	☐
Serviceability	☐	☐	☐	☑

Features of unit reviewed:

- 8088 processor
- 256K RAM
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Price: $A5445.

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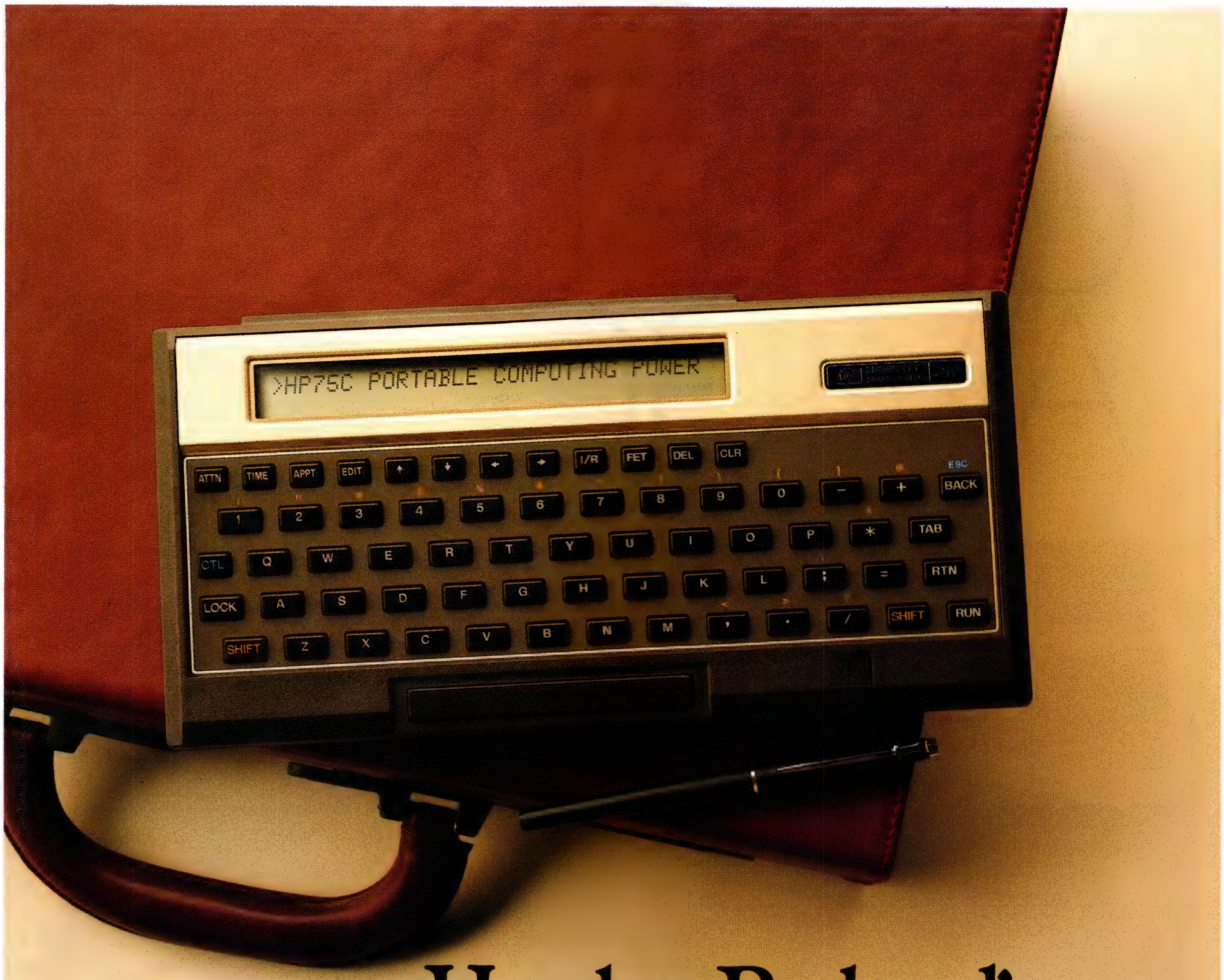

Hewlett-Packard's new computer can make your briefcase better equipped than most offices.

Hewlett-Packard introduce the ultimate portable computer, the HP 75C. A compact computer that can fit easily into your briefcase, and still perform with the same computing power only sophisticated offices enjoy.

The HP 75C is compact and light enough (740gms) to use in any situation from 'inflight' to 'on-site'.

Packed into this tiny package are all the tools you need to manipulate equations, perform immediate data collection and computation, write memos, create files, and much more.

The HP 75C can be interfaced with your television set, or an existing computer system.

With 16k bytes of memory, expandable up to 24k, there's plenty of room to write and store programmes, apart from using the 147 built in BASIC commands, statements and functions.

And, as the HP 75C features continuous memory, it won't forget information as soon as you switch it off.

The HP 75C also offers you a wide choice of accessories, including a mass storage cassette drive system, and a printer that operates on rechargeable batteries. But this doesn't mean you have to buy more briefcases. Each has been designed with the same economy of size as the HP 75C.

To see how an HP 75C can turn your briefcase into one of the best equipped offices in the country, call the Hewlett-Packard Personal Computer Group for the HP dealer closest to you.
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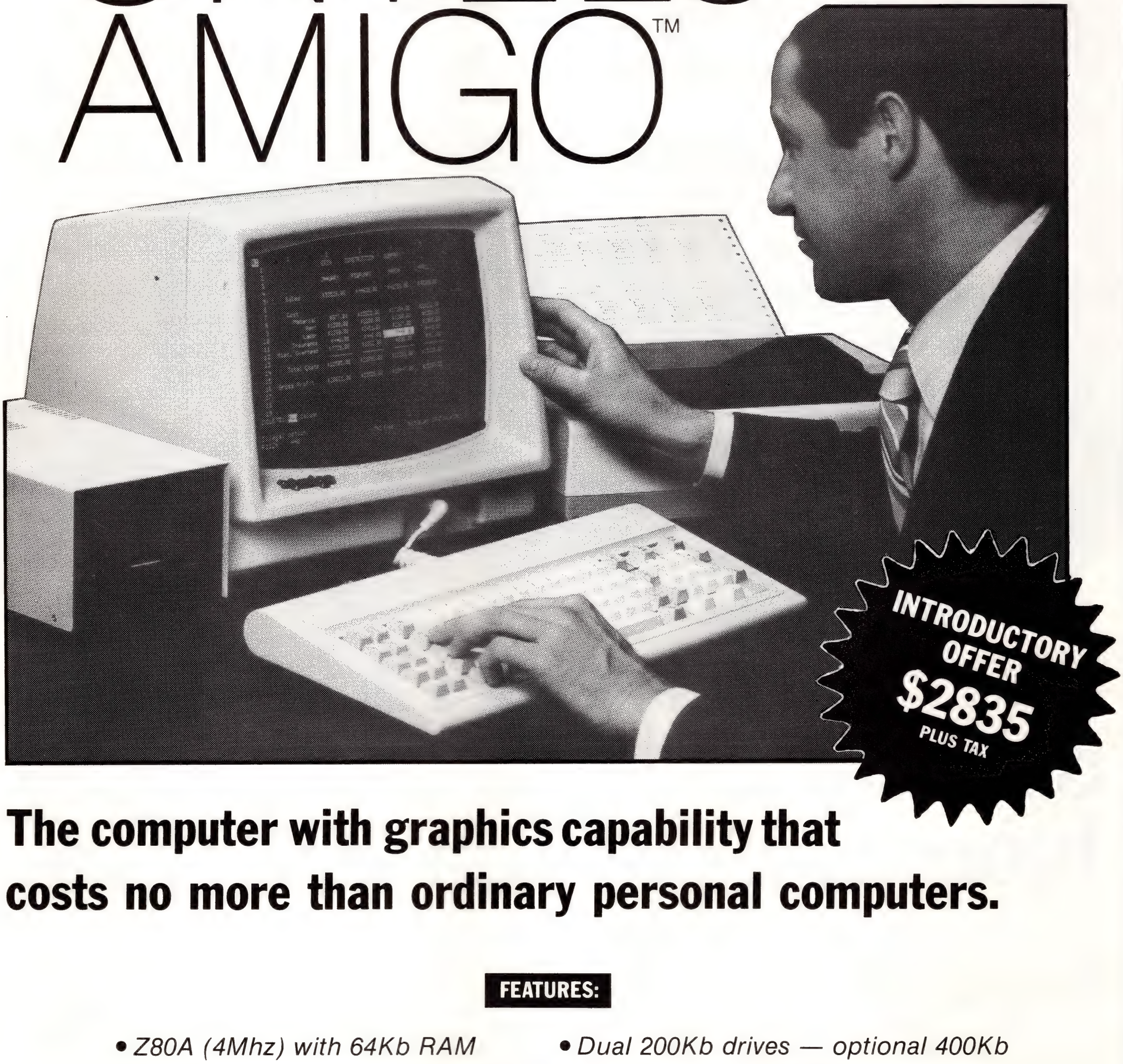

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Osborne's repercussions

THE failure of Osborne Computer to stablise its operations has had severe industry repercussions. Any time a large operation suffers a major downturn, it makes it tough for other companies to get money, especially if they show any flamboyance at all.

Although many people disliked Adam Osborne, any genuine dislike will probably come about as more and more companies have to live with the legacy of Osborne Computers. One company that wanted to buy Osborne was ITT. Another was NCR.

Apparently Osborne has a super-duper portable in the wings that one insider recently claimed would ruin competitors. Anyway, there are now only about 80 people at the company that once employed nearly 400. Many shareholders are beginning to gripe about the so-called new, button-down management installed by Osborne.

One thing this new management did, for example, was fire the ad agency, Carlick David Advertising, of Palo Alto, California. Let's face it, selling the original Osborne 1 with its clunky case and dinky screen was an incredible feat. So the new management has hired a Chicago agency that allegedly knows little if anything about computers or microcomputers or the different between hardware and software.

How do you motivate people to buy something if you have no idea what the motivational factors for the purchase of a microcomputer are? If you aren't into the micro scene, how can you determine those factors without spending a fortune in focus groups? And in a focus group, the data can be easily misinterpreted by the unknowledgeable. End of lecture.

Carlick did a fine job, and the new agency apparently has been bogged down.

Another interesting rumor about the last few months at Osborne alleges that the Executive was selling something like 1500 a month in Europe and 800 a month in the US. If that's true, it's pretty weird. Another rumor says the company has offered the Osborne 1 for $A350 a unit in lots of 1000.

Most people were sceptical of the company at the outset, but its phenomenal growth mesmerised everyone.

Osborne's Executive . . . at the heart of corporate collapse.

DEC turns to Tinsel Town

DIGITAL Equipment Corp (DEC) is turning to the glitter and glamor of Hollywood and the hustle and bustle of airports to help make DEC a household name. The minicomputer giant often criticised for its weak marketing, has hired a Hollywood agent to put its products into major motion pictures and television productions.

The company's merchandising team also recently scored an industry coup by signing a contract that could put DEC microcomputers for use in airports across the country. Adam Coutre, merchandising programs manager for DEC, is heading up the two projects.

DEC signed a contract with International Film Promotions in South Pasadena, California, in June to put DEC products and trademark into film productions. Couture reviews scripts and places DEC products in films he feels will appeal to the Digital target audience of professionals and businssmen.

He said the films must be "wholesome" and not contain objectionable violence. One of the first films moviegoers will see the Digital trademark in is *The Long Road* a G-rated family picture.

The film chronicles the travails of a lost pooch and stars O.J. Simpson as a friendly DEC truck driver who picks up the dog.

MSX heads for Las Vegas

A RECENT conference in San Francisco had Microsoft's Japan connection, Kay Nishi, talking about MSX, the operating system Microsoft is pushing as the standard for the next generation of portables and new 8-bit machines. It is CP/M-compatible.

Anyway, Nishi said there would be two or three MSX machines at the Winter Consumer Electronics Show in Las Vegas. He also predicted an equivalent of the Commodore 64 for less than $99. He said there would be some interesting microcomputers and microprocessor-based devices from Casio (a Sinclair lookalike), Hitachi (a fabulous speech synthesiser), Pioneer and Yamaha.

Casio is gearing up to make about 1 million thin credit-card calculators a month and some company is supposedly geared up to produce 10,000,000 liquid-crystal modules a month for the next generation of displays.

The mass-storage industry is abuzz with the rumor that Shugart will release an inexpensive 1-gigabyte, optical, read-write mass-storage device by November. Apparently Shugart got wind of a couple of small-time companies that will show similar devices at the next Comdex.

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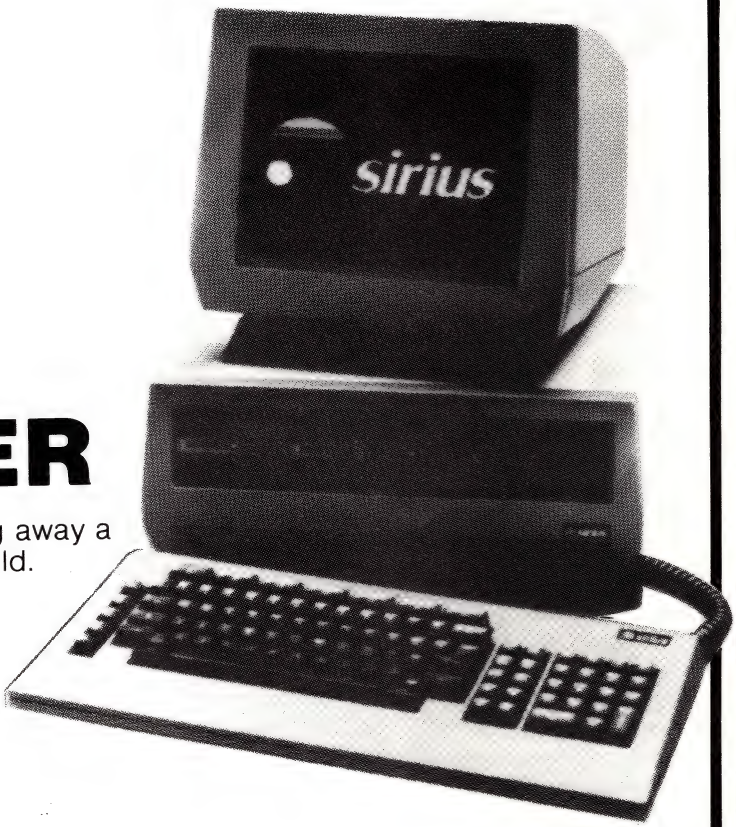

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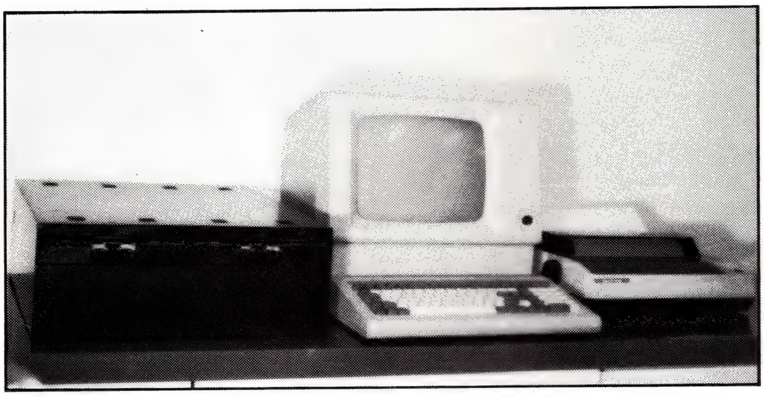

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Computer teachers

Workshops in Computer Studies
(Two volumes)
By Arthur Anderson and Derek Camiller.
CCH Australia, Sydney, 1983.

COMPUTER educators in colleges of advanced education have played an essential role in the development of school-based computer education, particularly in those States where there has been little support from the education system.

Working with trainee teachers and supporting teachers in schools, these educators develop an awareness of the immediate needs of teachers using currently available resources. They have to work with large numbers of teachers, providing awareness and literacy courses as well as supporting the development of critical skills that enable teachers to use computers in the classroom.

Two of the longest-serving computer educators in NSW are Arthur Anderson, from the St George Institute and Derek Camiller from Alexander Mackie College of Advanced Education, who have just published a two-volume set of workshops in computer studies, based on their experiences teaching teachers about computers. Their approach is based on the development of practical skills necessary to use microcomputers found in most schools.

Anderson and Camiller assert that this has to be based on a programming approach to the computer environment, as this is the form of computer environment most teachers will encounter. Their evolutionary programming approach is structured on a series of programming examples for the Apple IIe and is organised around the conceptual issues confronting teachers who have had nothing to do with computers before.

They avoid the trap of becoming entangled in the learning of a computer language by concentrating on the development of conceptual understanding of the computer environment using a hands-on approach in that much maligned, but almost universal, environment of Microsoft Basic and attendant file handling system.

The computer is introduced in Volume One, using the model of the calculator, as it is familiar to all teachers, then extending the model by introducing the concept of memory, programs and control structures. They introduce the concept of data as information and the program as a problem solving tool.

Once these concepts are learnt they are used to explore what computers do, using low and high-resolution Apple graphics, managing lists and tables of information, processing words and data processing concepts like searching and sorting. The last workshop in Volume One introducesa the use of programs in educational applications.

Each workshop uses several program examples or section of programs that are later combined into a larger program. Answers to the exercises that appear at the end of each subsection are contained in an appendix. Volume Two begins with a review of the first, then introduces the development of program applications. Two workshops improve the teacher's skill in the technique of program creation, then applications involving number, graphing, art, numerical methods, problem solving and simulations are developed. All examples used are appropriate to the experience and interest of teachers.

The educational programs most teachers start developing are discussed with workshops on computer assisted learning and skill and strategy games. Finally file handling is introduced with the development of a 300 line filing program.

Both volumes are well presented, the programming style is careful, with clear listings, and the results of program execution always displayed is relevant. The experience of the authors with teachers is evident throughout.

Their confidence in direct, hands on experience of the microcomputer environment as most teachers will find it today, has restrained them from introducing the many theoretical and political issues that are computer education today. These books may be considered old fashioned by some, eager to rush teachers into the world of packaged solutions or promote 'the computer is just another visual aid' approach.

These volumes offer a carefully-considered approach to problems of teaching teachers about computers based on several years' practical experience.

It feels very Australian, very New South Wales actually, with ideas for most involved in supporting grass roots computer education. ☐

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Magnum on streets

DULMONT Electronic Systems has released the Australian-designed and manufactured Magnum microcomputer. The 3.5kg portable computer uses the 80186 processor with 256K CMOS RAM and 128K ROM with an 8 x 80 LCD display. MS-DOS 2, MBasic 86, word processing, spreadsheet and planner-diary software is available in ROM. The 12 x 11 x 2in system will sell for $A2495.

Further information: President Computers, 100 George Street, Hornsby, NSW, 2077. Telephone: (02) 476 2700.

Enter L568 on Enquiry Card

Wicat broadside

WICAT has released four new 68000-based systems in Australia. The Wicat 75 is a single-user system with 500K memory and 10M-bytes of hard disk storage. The system 155 is an extended version of the multiuser System 150, offering 90M-bytes of hard disk storage and up to 4.5M-bytes of RAM. The System 250 supports 64 users with 16M-bytes of RAM and up to 479M-bytes of hard disk storage. The system 300 is designed for educational and administrative use in schools, supporting 30 student workstations and WISE, Wicat's Instructional System for Education.

Further information: Wicat Computer of Australia, 88 Christie Street, St Leonards, NSW, 2065. Tel: (02) 438 2911.

Enter L570 on Enquiry Card

Unicorn launched

AUSTRALIAN computer manufacturer SME Systems Pty Ltd has released the Unicorn MPU-700, seven-user computer system. The IEEE-696 bus system can support simultaneous operation of Z80, 8086 and 80186 processors. All processors run the appropriate versions of CP/M. Options include a full range of I/O, graphics boards and mass storage devices. The company's latest release is a set of color graphics boards at about half the cost of comparable imports. A single-user MPU-700 system with 21M-bytes of storage and peripherals would cost around $A10,115. A typical MPU-700 installation for seven users would include hard disk and floppy disk, terminals, printer DPC/OS 3 and CP/M software for A$28,985.

Expansion facilities are available to extend the number of users to 16, and disk capacity to 512M-bytes.

Further information: SME Systems, 22 Queen Street, Mitcham, Vic, 3132. Tel: (03) 874 3666.

Enter L571 on Enquiry Card

Ausdata 100

AUSDATA has released a hardware and software package designed for data entry and communications with mainframes. The package includes the Ausdata 100, a 64K, CP/M system with 5in 800K disk drives, integrated 1200bps modem and support for Bisync, SNA/SDLC and asynchronous communications. The Ausdata Entry software supports 327 3780 protocol and provides flexible screen formatting and data validation capabilities for data entry applications.

Further information: Ausdata, 1/175 Gibbs Street, Chatswood, NSW, 2067. Tel: (02) 406 5755.

Enter L572 on Enquiry Card

HaRD Day at THE KeyBoaRD, DeaR?

Sage for six users

RAKON has released the Sage 68000-based microcomputer in Australia. The Sage is claimed to support two to six users with 256K RAM, expandable to 1M-byte and a range of 640K floppy drives and hard disks. The system has been designed to use the UCSD p-System and can also run CP/M-68K. A wide range of applications software is available. The Sage is noted for its compact size and fast operation. Configurations start at $A6950 for a one-drive system.

Further information: Rakon, 39 Secondary Road, Bayswater, Vic, 3153. Tel: (03) 720 3188.

Enter L505 on Enquiry Card

Q'land offering

SOFTWARE Australia, a Queensland computer manufacturer, has released a 68000 based system running CP/M 68K. The system uses the IEEE-696 bus supporting 256K RAM, four serial ports and dual 8in, 1.35M-byte floppy drives. The machine can be supplied with an 8088/8085 or 8086 alternate processor running CP/M, CP/M-86 or MP/M-86.

Further information: Software Australia, 3/49 Sherwood Road, Toowong, Qld, 4066. Tel: (07) 371 7900.

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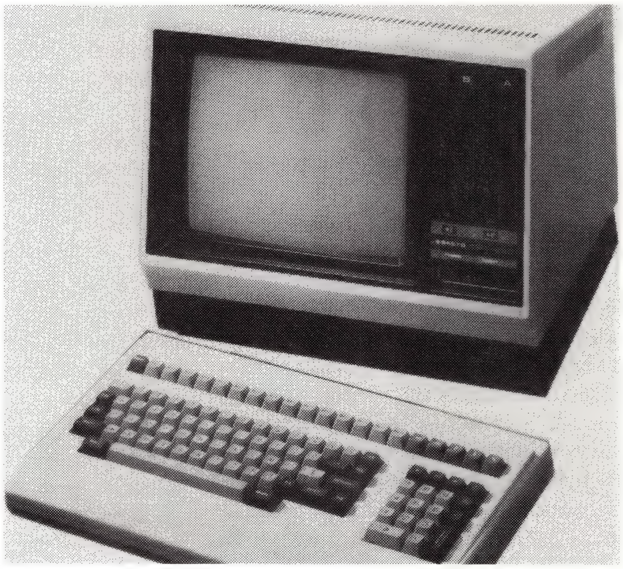
Sanyo's business graphics



SANYO Data Systems, a new division of Sanyo Office Machines, has introduced two new business computers with full graphic functions. The MBC 1200 and MBC 1250 computers feature a high-resolution, 640 x 400 dot matrix display for alphanumeric and graphic displays with a 33 or 40 line display option. The MBC 1200 comes with one 640K-byte internal 5¼in slim-type mini floppy disk drive, while the MBC 1250 has two giving a total disk capacity of 1.28M-bytes.

Further information: Sanyo Data Systems, 127 Walker Street, Nth Sydney, NSW 2060. Telephone: (02) 929 4644.

Enter L569 on Enquiry Card

To obtain further details — literature, prices and other information that may be available — for the products described in the editorial columns or from advertisements, enter the number shown at the foot of the item onto the PRODUCT ENQUIRY SERVICE CARD.

Quick Black Fox

DATACRAFT's Black Fox Box, a hand-held, battery-operated message generator for asynchronous RS-232 devices, can be used to test printers, VDUs, modems, interfaces or systems. Up to 16 messages, each from 1-128 characters long, can be programmed and character formats of 5- to 8-data bits and one or two stop bits can be intermixed through the 16 messages. The Fox Box is powered by 4AA Nicad batteries and comes complete with an AC recharger. Switch selectable options allow the Fox Box to look like a modem or terminal with the flip of the DTE/DEE switch and standard PROM programs are available.

Further information: Datacraft, Maroondah Highway, Croydon, Vic, 3136. Tel: (03) 726 9911.

Enter L537 on Enquiry Card

Textronix combo

TEKTRONIX's new 336 combination non-storage and digital storage oscilloscope is claimed to be capable of measuring signals to 50MH equivalent time bandwidth, with memory length of 8 bits x 1024 words. When used in the non-storage mode, it is said to measure signals to 50 Mhz bandwidth, giving the user maximum flexibility in analysing and storing low-rep-rate signals on the digital channel. Microprocessor control are said to make a wide range of waveform processing possible, and the menu system plus alphanumeric CRT readout are said to make the 336 easy to use. This ultra-portable digital scope is ideal for applications requiring slow-to-medium-speed storage and waveform manipulation.

Further information: Tektronix, 80 Waterloo Road, North Ryde, NSW, 2113. Tel: (02) 888 7066.

Enter L539 on Enquiry Card

Volume production

VOLUME production of Modem Technology's multi-function unit, the UDM-1200, is said to mean price reductions and enhanced auto answer. The auto answer-auto disconnect function operates in two modes: the first, automation, requires no control by the attached terminal; the second allows the computer to dictate the progress of answering and disconnection. The UDM-1200 offers a range of switch-selectable speeds and an auxiliary port allows the user to dial out under computer control. Other changes include a redesigned front panel, additional LEDs to signal test mode and ring tone detection plus implementation of originate-answer selection via the RS-232-C port.

Further information: Modem Technology, Suite 1, 55-65 Phillip Street, Parramatta, NSW, 2150. Tel: (02) 635 9618.

Enter L540 on Enquiry Card

Chess with an illegal buzz

HANIMEX's Computachess II chess set, which has a miniature microprocessor as its heart, presents up to eight different levels of difficulty, which the company claims makes it well-suited for instructional purposes. Its memory allows interruption of play and later resumption. Computachess II uses small micro sensor lights to signal player positions and emits a soft buzzing sound if a layer makes an illegal move. Chess pieces are stored in a compartment when the game is not in use and four small AA-size penlight batteries power the unit.

Further information: Hanimex Pty Ltd, 108 Old Brookvale Road, Brookvale, NSW, 2100. Telephone: (02) 938 0473.

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Fourth ACADS

THE ACADS Software Index (fourth edition) covers about 2000 programs being used by Australian industry, and includes a number of additions since first published three years ago. Emphasis is on programs for the manufacturing, engineering, architectural building and construction industries and several are designed for use on microcomputer installations. The index gives one line of information for each of the programs listed in alphabetical order — the listing indicates the program name, bureau-owner or computer-calculator and its subject matter. The index is available in either bound, hard copy or microfiche.

Further information: The Association for Computer Aided Design, 576 St Kilda Road, Melbourne, Vic, 3004. Tel: (03) 51 9153.

Enter L541 on Enquiry Card

IBM color screen

IBM's new color display screen for PCs is a high-resolution, direct-drive monitor designed to enhance displays of business data, word processing and graphics. Features include up to 25 lines of upper or lower case text, with either 40 or 80 char line, text mode capable of displaying 256 characters in 16 foreground or character colors on any one of eight background colors; high-resolution black and white graphics mode; medium-resolution color graphics mode and high-resolution 8 x 8-dot character matrix on a 318mm screen. The color monitor complements IBM's system unit and may be placed on top of it.

Further information: IBM, 168 Kent Street, Sydney, NSW, 2000. Tel: (02) 234 5678.

Enter L542 on Enquiry Card

Mini Print Spooler

THE Black Box catalog Mini Print Spooler from Datacraft, said to free computers from slow printing, will accept characters from the host computer at a rate of 5800 char/sec. This device is suited ideally to word processors — for example, a document can be dumped to the printer via the spooler in seconds, and another document can be retrieved from disk edited. Features include multiple copy production and each unit is equipped with an updating status indicator to reflect the amount of memory in use or the number of copies selected. The mini printer spooler is available in four models.

Further information: Datacraft, Maroondah Highway, Croydon, Vic, 3136. Tel: (03) 726 9911.

Enter L543 on Enquiry Card

TV monitor unit

TEKTRONIX's new portable, single unit waveform monitor-victorscope (1740 series), available for use by television personnel in all NTSC and PAL system countries, is said to provide similar performance to that available in the company's 528A Waveform Monitor and 1420 Vectorscope combination. Typical applications are said to include video signal monitoring in camera-control units, VTR bridges, production switcher consoles and in mobile vans. Features include two functions in one unit, DC operation, portability and bright CRT display. The two-in-one feature allows the user ready access to basic waveform monitor and vectorscope functions in a single, compact package.

Further information: Tektronix, 80 Waterloo Road, North Ryde, NSW, 2113. Tel: (02) 888 7066.

Enter L544 on Enquiry Card

A Case for data

NEW data communication devices, from Case Communication System perform a wide range of data conversion and interfacing functions including code conversion, data buffeting, speed translation, interface control, protocol and parity conversion. Called the Comac range it includes a DRC data rate converter, BUF buffer box, ABC code convertor, Modem controller, Auto answer unit and automatic Baud rate detector. The buffer box provides 4000 characters of buffer memory which may be interposed between a computer and terminal-printer.

Further information: Case Communication Systems, 1-3 Rodborough Road, Frenchs Forest, NSW, 2086. Tel: (02) 451 6655.

Enter L546 on Enquiry Card

PC printer/plotter

TOKYO Data Systems Pty Ltd has announced a new low-priced printer plotter, designed for use on personal computers and small business systems. The specifications of the $A350, MCP-40 include four-colour printing, 40 or 80 char/line at 12 char/sec. Plotting resolution is 2mm/step with a vertical speed of 73mm/sec Centronics and serial interfaces are available.

Further information: Tokyo Data Systems, PO Box 76, St Leonards, NSW 2065. Tel: (02) 439 6064.

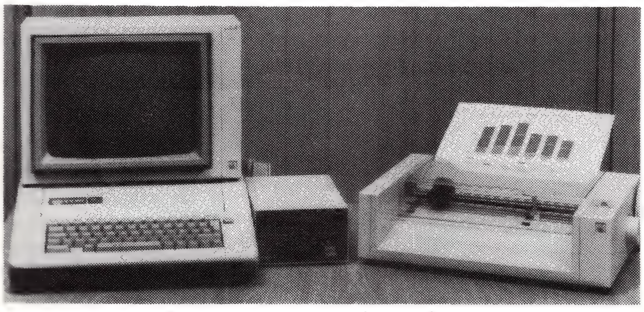
Enter L545 on Enquiry Card

Apple's plotting in color

APPLE Computer Australia has launched a new multi-color plotter, compatible with its full range of personal computers. The Apple Color Plotter which produces presentation-quality graphs and charts on either paper or overhead transparencies, is priced at $A1295. The plotter features four color pens which can be interchanged automatically during operation. Commands given to the plotter by the graphics software determine pen selection. Designed for both plotting accuracy and speed, the plotter provides 0.1mm resolution, 0.2mm repeatability, and 10cm/sec plotting speed. Its variable-width plotting bed and adjustable pinch roller mechanisms permit a wide choice of media options up to 297mm x 420mm (A3).

Further information: Apple Computer, 32 Waterloo Road, North Ryde, ·NSW 2113. Telephone: (02) 241 2016.

Enter L516 on Enquiry Card



The new Apple colour plotter

Zofarry's Vision

ZOFARRY Enterprises of Burwood, NSW, has announced the availability of their Vision 128/256 Memory Expansion products for the Apple II and Apple IIe micro computers. The Vision 80 Text Card has maintained its market position as the No 2 Australian best seller for any peripherals, and No 1 world best seller for Apple-compatible text cards. With much higher potential demand for memory products, and exports of Australian high-tech products reaching maturity, success is assured for these devices. Initial shipments to the US, Canada, the UK, New Zealand and South Africa indicate high demand and acceptance for Australian-designed and manufactured computer products.

Further information: Zofarry Enterprises, Cnr. Burwood and Parramatta Roads, Burwood, NSW 2134. Tel: (02) 745 1888.

Enter L548 on Enquiry Card

Terminal offering

ANDERSON Digital Equipment now offers the QUT120 and QUT108 CRT terminals from Qume. The Qume terminals include a menu set-up mode, a 25th status line, sculptured keys, high resolution 7 x 9 character format with descenders, separate programmable function keys and six video attributes including reverse video field and screen, dual intensity, blinking, underlining, and protected format. A complete set of line drawing characters is included.

Further information: Anderson Digital Equipment, 14 Whiteside Road, Clayton, Vic 3168. Telephone: (03) 544 3444.

Enter L549 on Enquiry Card

Rapid Scribe

EMPLOYING a newly designed printhead, Anadex Inc's new DP6500 Rapid Scribe data processing dot matrix printer achieves 500 char/sec at 10 char/in and 540 char/sec at 12 char/in. Key to the high printing speeds is a new 18-needle printhead consisting of two vertical columns of nine each. As well as the high-speed draft mode the user can select enhanced mode and print 100 char/in in proportionally spaced, dual pass correspondence quality. Friction and tractor feed and 4.5K buffers are standard accesories. Optionally, a single-bin sheet feeder allows use of cut sheet stationery for word processing applications and font downloading, alternate character fonts, bar code fonts and extra 16K buffer. High-resolution graphics capability provide dot resolution of either 72 or 144 dots/in. Priced at less than $A4000, the DP6500 is available for immediate delivery.

Further information: Datascope, 33 Grosvenor Street, Neutral Bay, NSW 2089. Tel: (02) 909 1233.

Enter L547 on Enquiry Card

Gates Cell outlets

WARBURTON Franki has announced extra NSW outlets for the distribution of Gates Energy Cells, the recombining, rechargeable, sealed, lead acid cells and batteries. The new outlets are in Wollongong and Wickham, and as well as handling the range of cells and batteries, these sub-distributors will offer a full technical consultation service. A facility to provide custom-made batteries of various voltage and ampere hour ratings from the Gates single 2V cells is also available. The company also has appointed its first Gates Energy Cells agent at Brookvale in Sydney.

Further information: Warburton Franki, 199 Parramatta Rd, Auburn, NSW, 2144. Tel: (02) 648 1711.

Enter L550 on Enquiry Card

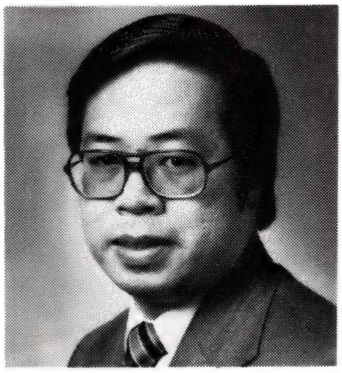
Data acquisition

OZTRONICS Australia Pty Ltd has released OZ1, a data acquisition system which allows a computer to be used to gather analogue and digital information from the real world. OZ1 data acquisition units may be connected to the serial port of the host computer either as a single unit, or as a network of up to 16 units in a star or daisy chained configuration. Each OZ1 unit provides for 30 single ended or 15 differential analogue channels and two digital channels, and a fully implemented network provides for 480 single ended or 240 differential analogue channels and 32 digital channels. Special purpose input extension modules are also available for temperature meansurement, using either LM335 monolithic devices or thermocouples, and for soil and water salinity measurement using four electrode salinity probes. Other special purpose extension modules are custom developed for specialised applications. Units are manufactured to order and retail for $A1245.

Further information: OZtronics Australia, Box 375 Belgrave, Vic 3160. Tel: (03) 754 7690.

Enter L551 on Enquiry Card

"...one of the best general accounting packages..."



"The Attache software is easy to operate, yet has the inbuilt capacity to satisfy the most demanding small to medium business. Attache software is one of the country's best general accounting packages."

With these comments Wang national marketing manager Peter Wong joined other top manufacturers IBM, DEC, NEC, Toshiba, Panasonic and Hitachi in their endorsement of the Attache breakthrough in software design.

Enter L064 on Enquiry Card

WANG COMPUTERS – NATIONAL MARKETING DEPARTMENT

In an industry renowned for rapid change, Attache is a revolution. The new Attache concept takes software into the truly user-friendly era for the very first time.

Attache's unique software package lets you get a sophisticated commercial accounting system up and running immediately, regardless of your experience, but if you need support, you've got it. Attache is Australia's fully-supported software system.

Your complete 'software-to-go' package includes start-up kit, printed stationery, test company, well-documented manuals and live program diskettes. Neatly arranged in an attache case, of course!

A comprehensive suite of 126 programs ensures that there's one just right for you. Accounting modules may be purchased individually or you can choose from one of the business packs. Categories include accounts receivable (debtors); invoicing/sales analysis; inventory control (stock); accounts payable (creditors); general ledger and payroll.

Design compatibility eliminates duplication as your Attache system grows with you.

Attache software. It's very new and very different. Unfortunately it's not yet everywhere, so call us if your dealer doesn't stock it.

Attaché
software to go

Attache Software 275 Alfred St North Sydney
Phone 929 8700 Dealer enquiries welcome

Some Easy pieces

COMMODORE Computer announce three software products — Easyscript 64, Easyspell 64 and Simon's Basic. Easyscript 64, a wordprocessor providing the user with options of much larger products, has vertical and horizontal tabs, search and replace functions, text width from 40 to 240 columns, interface to different supported printers and function keys for frequently used options. Easyspell, a disk-based spelling checker program designed to work with Easyscript, has a built-in 20,000 word dictionary and automatically corrects spelling errors, counts the words in a manuscripts or contract and shows which words to use the most and the least. Simon's Basic features four complete groups of commands: high resolution, structured programming, music commands and program aids. These programs are designed more for the experienced programmer.

Further information: Commodore Computer, 5 Orion Street, Lane Cove, NSW, 2066. Tel: (02) 427 4888.

Enter L519 on Enquiry Card

Retailing aid

TO coincide with the Australian Retailers Association annual convention on September 25-27, Cromer Programming Services released a Retail Inventory Management System aimed at improving retailers' performances. Called Automatic Execumatic, the system is marketed to run on the IBM PC, and presents screen displays on printed copy of conventional merchandise information to enable buyers to track and act on unit sales and stock movements. It is the first retail inventory management system available on a microcomputer that focuses on the money-making performance of individual lines and classes of merchandise. Enhancements and additions to the system will be released progressively and will include OCR and bar code printing, purchase order and POS interface.

Further information: Cromer Programming Services, 26 Ridge Street, North Sydney, NSW, 2060. Tel: (02) 923 2899.

Enter L520 on Enquiry Card

Attache first

ATTACHE Software's accounting packages, the first Australian-distributed software product for the Wang PC, is said to offer easy operation, yet has inbuilt capability which would suit the most demanding small-to-medium-size business. The specially designed attache case contains a full startup kit, including stationery, test package, manuals and live program disk. If the user needs support, the structure exists for step-by-step progress — from learning to operate a PC through to the implementation of a computer system in business.

Further information: Attache Software, 275 Alfred Street, North Sydney, NSW, 2060. Tel: (02) 929 8700.

Enter L521 on Enquiry Card

A Wise system

WISE, an interactive computer system for education, was demonstrated recently in a series of seminar workshops in most capital cities by Dr Fred O'Neal, a world authority on computer aided instruction (CAI). Designed to operate independently or alongside existing computer systems, Wise is considered the state of the art in CAI. Its client list includes such organisations as American Express, the US Air Force, British Telecom and the British Army. Dr O'Neal said education today was labor-intensive, time-consuming and costly. The advantages of the computer over other teaching devices are speed and space — it can travel instantly to hundreds or even thousands of locations and can store an almost unlimited number of examples, pages of instruction and assessing criteria.

Further information: Wicat Computer of Aust Pty Ltd, 88 Christie Street, St Leonards, NSW, 2065. Tel: (02) 438 2911.

Enter L522 on Enquiry Card

Lotus interface

MSA, one of the world's largest suppliers of computer applications software, has announced an enhanced version of Executive Peachpak (EP), which provides a direct interface to Lotus Development Corp's 1-2-3 integrated microcomputer software. Peachpak is a set of microcomputer applications featuring Peachlink, which provides the ability to download mainframe data to a micro. When Peachpak was released last year it provided the link to micro software developed by Peachtree software, an MSA subsidiary. The EP enhanced version is available for the IBM PC and PC/XT to organisations with one or more MSA online systems running on IBM mainframe computers. EP components include Peachcalc, electronic spreadsheet, Peachtext, business graphics and list manager mini-personal database.

Further information: Management Science America (Australia) Pty Ltd, 100 Miller Street, North Sydney, NSW, 2060. Tel: (02) 929 0711.

Enter L523 on Enquiry Card

VIC Education

THE Computer Classics package, VIC Education, is a learning centre designed for the Commodore VIC-20 home computer. The VIC series, comprising 19 cassettes, teach basic skills in mathematics and language, with varying levels to suit children of all ages. The VIC programs have been developed by Australian educationalists for Australian school children, and can be built up with single cassettes (¼in audio) which operate through the 1530 Commodore Datasette Unit. A display box is provided to showcase the series plus 12 folders explaining necessary details.

Further information: Computer Classics Pty Ltd, 11-15 Falcon Street, Crows Nest, NSW, 2065. Tel: (02) 438 4866.

Enter L524 on Enquiry Card

Interactive training

SOURCEWARE has released new software packages which provide interactive training in the use of the IBM PC. The first, called The Instructor, is a self-teaching disk-based tool for learners of the PC. The second, Professor DOS, gives disk-based training for advanced users. Instructor users are taught to operate the keyboard to perform system and application tasks, to control applications, and to select menus to move from one area of program to another. Professor DOS includes PC concepts, DOS editing keys, commands and applications.

Further information: Sourceware Pty Ltd, 4/73 Albert Avenue, Chatswood, NSW, 2067. Tel: (02) 411 5711.

Enter L525 on Enquiry Card

Science Solverpack

THE Software Arts TK! Solverpack for introductory science, the third in a series of application packages designed for use with the TK! Solver program, is an aid for solving problems in business, science, engineering and education. The Solverpack includes 12 models, each containing the necessary equations, values and tables for solving problems in areas such as physics, chemistry and biology. The Solverpack is designed to be used as an ancilliary to, rather than a replacement for, basic textbooks and lectures. The program is available for the IBM PC and also will run on the Digital Professional 350 PC, the Digital Rainbow PC and the Wang PC.

Further information: Software Arts, 156 Fifth Avenue, New York, USA 10010. Tel: (212) 206 9090.

Enter L526 on Enquiry Card

Commodore launch

COMMODORE Business Machines has announced a nationwide promotion built around six business software programs available for the Commodore 8000 series. The programs include computerised filing, inventory and costing systems, plus packages designed for needs such as real estate, video shop management and medical practice. The real estate program, Rendat, looks after landlord, property and tenant files to facilitate automatic rent receipting and also will produce detailed owner statements and expense and deposit slips. Another program, Medibill, is capable of on-the-spot accounting functions as well as fortnightly or monthly statements.

Further information: Commodore Business Machines, 5 Orion Street, Lane Cove, NSW, 2066. Tel: (02) 427 4888.

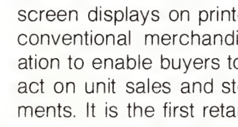
Enter L527 on Enquiry Card

5-0 Sybiz offer

TRACKFAST Computer, distributors of the Sybiz accounting package, has released version 5-0 of the software. The new version, which runs under CP/M, MS-DOS and MP/M, offers many features, including cheque printing, multi-stock location and cash requirement reporting. Existing Sybiz users should not have to re-enter on data files. The advanced user module is the direct result of Sybiz canvassing about 500 users and dealers for their processing requirements for the next 2-3 years.

Further information: Trackfast Computer, 220 Pacific Highway, Crows Nest, NSW, 2065. Tel: (02) 922 6833.

Enter L528 on Enquiry Card



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Enter L042 on Enquiry Card

Logo interpreter

DIGITAL Research has introduced a Logo interpreter, ideal for first time computer users as well as for advanced software programmers, for the IBM PC. Called Dr Logo, Digital Research says the system can be used in a number of applications from simple symbolic mathematics to artificial intelligence. Dr Logo maintains features common to other Logos, including turtle graphics, list processing, workspace management and full-screen program editing. Dr Logo's builtin help information explains primitives, and examples of how they are used are provided. A full-screen procedure editor explains editing commands to free users. Users can take advantage of the entire IBM memory, giving up to 100,000 workspace nodes, or 40 times the workspace available with common Logo interpreters. Digital advises it has made a joint commitment with Texas Instruments to make Dr Logo available on its PC.

Further information: Digital Research, 160 Central Avenue, Pacific Grove, California, USA. Tel: (408) 649 3869.

Enter L529 on Enquiry Card

CP/M-86 available

DIGITAL Research has announced that Concurrent CP/M-86 is now available in an OEM version. Concurrent CP/M, suitable for the IBM PC, is the first operating system which lets single-user computers perform several tasks simultaneously. Companies which have signed for Concurrent CP/M include DEC, Fujitsu, NCR, Xerox, NEC and Texas Instruments. The system is compatible with Digital's family of 16-bit operating units, including CP/M 68K, for use with 68000-based microcomputers. Concurrent supports many of the software application packages for business, from word processing to spreadsheets such as Wordstar and Supercalc. CP/M is available through Computerland, Softsel, Hamilton Microsystems and Software Distributors.

Further information: Digital Research, 160 Central Avenue, Pacific Grove, California, USA. Tel: (408) 649 3896.

Enter L530 on Enquiry Card

Datronics offering

FOLLOWING the announcement that Datronics is offering the latest communication and application enhancements to the Exxon 500 series processor, the company now advises the availability of WP-CP/M integration. The new integration allows 500 series users to transfer files bi-directionally from WP mode to CP/M mode. Financial planning information, for example, can be incorporated from files operated under CP/M into documents created under the word processing system. The Exxon 500 series, available only from Datronics, features word and data processing capabilities which include dictionary and "explain" features, global search and replace foot note formatting and numerical problem-solving.

Further information: Datronics Pty Ltd, 376-380 Lane Cove Road, North Ryde, NSW, 2113. Tel: (02) 887 9333.

Enter L531 on Enquiry Card

Accommodating PC

A DESKTOP computer system called Auto Host, is designed for use in the accommodation industry, covers two main functions — forward reservations and front office — in outlets with under 100 rooms. Developed in Australia and supplied by the Hotel Restaurant and Club (HRC) group of companies, the system is designed to run on the IBM PC computer.

It will accommodate reservations up to two years in advance, as well as guest and agent names, number of guests deposit paid, tariff quoted and expected arrival time. Security of financial data is maintained by an unlisted function accessible only by a user-defined password.

Further information: HRC Servit Pty Ltd, 16-18 Cahill Street, Camperdown, NSW, 2050. Telephone: (02) 517 1166.

Enter L532 on Enquiry Card

Portable Synapse

SYNAPSE Software has released three programs for the Epson HX-20 portable. The programs include puzzles demonstrating sound and graphics capabilities of the machine, a drawing program Image and a disassembler for the 6301 processor used in the Epson HX-20. The programs are available on standard cassette for $A14.50 and on microcassette for $A19.50.

Further information: Synapse Software, PO Box 29, Cottesloe, Western Australia, 6011.

Enter L533 on Enquiry Card

Micromagic

IP SHARP Associates is offering users of IBM's personal computer a facility called Micromagic which allows the transfer of data between Sharp's APL service and the PC's files. The facility uses a communications program called Microcomm on diskette and an enhanced version of Sharp's time series retrieval and manipulation language, Magic. The Microcomm diskette costs $A150.

Further information: IP Sharp Associates Pty Ltd, 55 Elizabeth St, Sydney, 2000. Tel: (02) 232 6366.

Enter L534 on Enquiry Card

Visiword release

VISIWORD, a word processor from Visicorp, has been released by Imagineering. Compatible with the IBM Personal Computer, the program's primary functions are selected by a single keystroke. The split-screen windowing function allows two documents to be seen at once, and takes parts of one and incorporates them into the other. The Visispell program aids proofreading and corrects spelling errors. Features include status line, ruler, automatic pagination, print spooling, headers and footers, format changes dictionary of over 100,000 words, spelling memory and personal dictionary.

Further information: Imagineering, 579 Harris Street, Ultimo, NSW 2007. Tel: (02) 212 1411.

Enter L535 on Enquiry Card

Rapid languages

MYRIAD Computer Services in Melbourne has been appointed Australian distributor for Filetab Support Services of the UK, handling RPL (rapid programming language) and RQL (rapid query language) for the DEC PDP 11, VAX and Professional. RPL is a simple to use yet powerful and flexible, automatic programming language which has been developed to enable commercial and business applications to be produced quickly and easily. Features of the language enable screen handling, data input and validation, file creation, updating, merging and report production. RQL is a powerful reporting system which uses a concise "English language" instruction set, and can be learnt in a few hours. Prices depend on hardware configuration and start from $A1800 for RPL ($A1100 for RQL) on the Professional to $A12,500 for RPL ($A7500 for RQL) on the larger PDP's and VAX for a 99-year licence.

Further information: Myriad, PO Box 31, Avondale Heights, Victoria 3036. Tel: (03) 523 8327.

Enter L536 on Enquiry Card

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A COMPLETE SOLUTION

Business/Scientific microcomputer
FOR UNDER $3000 — Including Software

Now we also include "Business Master" full accounting system—(A/R, A/P, G/L, Stock/Invoicing)

. . . THAT INCLUDES THE CONQUEROR COMPUTER WITH A DISK DRIVE AND ALL THE SOFTWARE YOU NEED TO WORK BETTER AND FASTER WITH WORDS, WITH NUMBERS, AND WITH IDEAS, NOW.

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SO YOU NEVER HAVE TO OUTGROW YOUR CONQUEROR YOU CAN EASILY UPGRADE WITH ADDITIONAL DRIVES OR HARD DISK STORAGE AND GROW TO A MULTI-USER SYSTEM WITH A MAXIMUM OF 16 USERS AS YOUR NEEDS GROW.
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Enter L044 on Enquiry Card

Computer sales

COMPUTERISED Buyers and Sellers has introduced a fully computerised buying and selling system, the first of its kind in Australia. Details about what is to be sold are fed into a central computer — houses, home units, land, rural properties, businesses, cars, motorbikes, trucks, caravans and boats can all be listed for sale. This information is then automatically matched daily with the detailed requirements of buyers who have listed with Computerised Buyers and Sellers. The computer system used by Computerised Buyers and Sellers is the Spectrum SS23, designed and manufactured in Australia by Melbourne-based DD Webster Electronics.

Further information: Computerised Buyers and Sellers, 13/77 Pacific Highway, North Sydney 2060.

Enter L513 on Enquiry Card

CAD sales lift

THE large Sydney-based engineering company, Noyes Bros Pty Ltd, has helped lift Engineering Computer Sales to Australia's number four CAD supplier. Noyes has bought a HP-based CAD200 system. The CAD200 software is being used intitially by Noyes Bros projects division for electrical schematic drawings for the company's materials handling projects. The Noyes installation is the latest of five sales by ECS in the past two months, which have included sales to the Chisholm Institute of Technology, and Melbourne architect Bonaldi, Forbes and Fitzharding. Noyes placed the order with ECS after a series of bench tests on competitive systems, and found that CAD200 could handle the electrical schematics from four to eight times faster than a draftsman.

Portable Spectrum

THE portability of the Australian-designed Spectrum Eleven minicomputer, plus its capacity to store and process large amounts of data quickly, has provided a useful laboratory aid for the State Electricity Commission of Victoria. This year, the number of Spectrums used for scientific research by the SEC rose to 20 with the recent purchase of a dual-drive floppy disc Spectrum Eleven D, a model storing 2.52, with a memory of 64K-bytes. These desktop machines have been allocated to a variety of research projects, often moving back and forth from the La Trobe Valley to the head research laboratory in Richmond.

Repco Rainbows

REPCO Accessories of Bankstown, Sydney, has selected Digital's Rainbow 100 PC to handle a variety of jobs such as budgeting, planning, payroll analysis, costing and journal calculations. The company is also looking to use the PC for such tasks as general ledger and critical path analysis. The division, which employs about 100 people, could have at any one stage between 4000 and 5000 products in stock. Digital's helpline was one of the reasons Repco opted for the Rainbow 100, and has helped the division on several occasions, answering queries immediately.

Further information: Digital Equipment Corporation, Railway Parade, Chatswood, NSW, 2067. Tel: (02) 412 5252.

Enter L514 on Enquiry Card

Probing the coasts

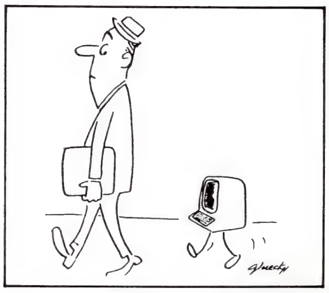
DESPITE Australia's long coastline, a crucial shortage of deepwater ports exists; a problem which has resulted in the development of highly sophisticated open-sea shipping terminals. SLM Associates, an independent Australian engineering consultancy (formerly known as Soros Longworth & McKenzie), is using a Wicat 150 computer system to conduct extensive site investigations and to plan, design and build off-shore installations along Australia's coastline. Using software developed in Hawaii, the company is able to analyse ships under the action of wind, waves and currents. SLM Associates designs efficient and appropriate marine structures including open-deck berths, approach jetties, breakwaters, caisson and piled container wharves, fendering and mooring systems and small craft jetties and marinas.

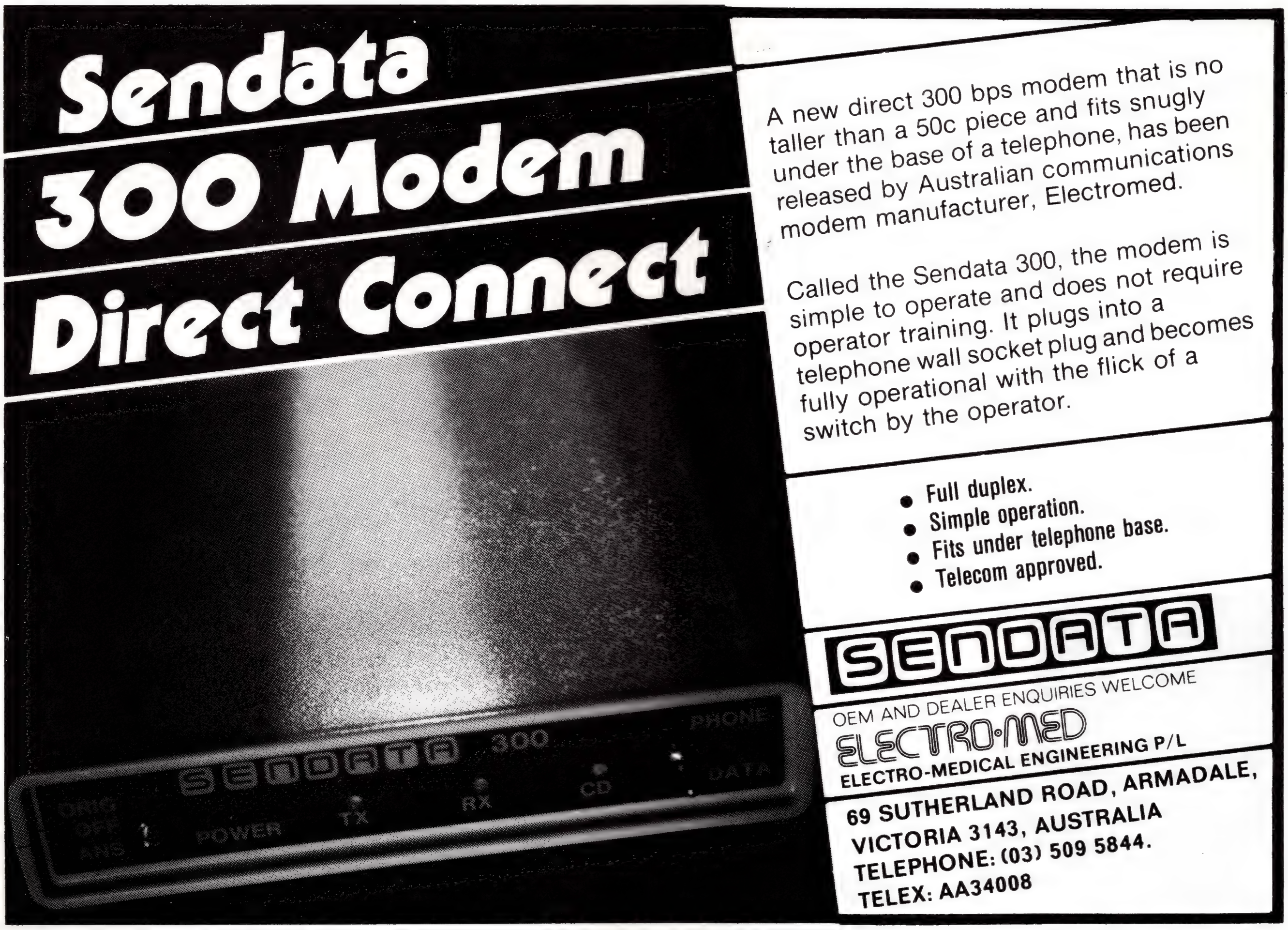
Model hospital

BUSINESS Modeller, a financial modelling system which has been installed in Honolulu's Rehabilitation Hospital of the Pacific since 1981, has made the task of financial control an effective and cost-efficient process. The system, developed by Business Model Systems, allows numerical information to be put into a set of tables called a model. Information within a model may be manipulated with each table or across tables, as needed.

Further information: Business Model Systems, 3rd Floor, 518 Brunswick Street, New Farm, Qld, 4005. Tel: (07) 358 4800.

Enter L515 on Enquiry Card





Sendata
300 Modem
Direct Connect

A new direct 300 bps modem that is no taller than a 50c piece and fits snugly under the base of a telephone, has been released by Australian communications modem manufacturer, Electromed.

Called the Sendata 300, the modem is simple to operate and does not require operator training. It plugs into a telephone wall socket plug and becomes fully operational with the flick of a switch by the operator.

- Full duplex.
- Simple operation.
- Fits under telephone base.
- Telecom approved.

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TELEX: AA34008

Enter L045 on Enquiry Card

Razor-soft editor

TEXT-file, a text-editor program for the Sharp PC-1500 or Tandy PC-2 hand-held computers, is the first software release from Razor-soft. The program is said to allow text to be entered, reviewed, edited, printed, and saved to cassette. Text-file is an enhanced version of the program which won second prize in the recent Sharp PC-1500 software competition. The program requires a computer with at least a 4K RAM expansion module installed. For the most common 8K RAM expansion, the program allows up to 85 lines of text, each 79 characters long, to be handled. Text-file is supplied on cassette, and comes with an instruction manual. The recommended retail price is $A25.

Further information: Razor-soft, 1 Lantana Court, Frankston, Vic 3199.

Enter L574 on Enquiry Card

Online Sourceware

SOURCEWARE has acquired the distribution rights to a micro-mainframe integration package from US software company Online Software. The Omnilink package for the IBM PC, combines Omnicom, a mainframe-based message system, with an intelligent communications link between mainframe and PC and Omnimicro, an applications development system with query facilities and word processing, spreadsheet and graphics.

Further information: Sourceware, 4/73 Albert Avenue, Chatswood, NSW 2067. Tel: (02) 411 5711.

Enter L575 on Enquiry Card

Style setter

HOLMES Computer Co has developed a product that takes advantage of the new developments in dotmatrix technology. Fontpack has been developed in Australia, and operates with the new Toshiba P1350 letter-quality dot matrix printer. A range of fonts or type-styles already are available, and others are being developed. Standard fonts such as Messenger, Helvesan and Italics can be supplied, along with more specialised applications — Greek/math, scientific symbols, Superscript and OCR B, etc. Fonts also can be developed to individual specifications. The Toshiba P1350 uses a 24-pin head, allowing the Toshiba to concentrate the dots in the density required for letter-quality, at speeds of up to 100 char/sec. In draft mode, the P1350 is said to print at 160 and 192 char/sec.

Further information: Holmes Computer Co., 212 Northbourne Avenue, Canberra City, ACT 2601. Tel: (062) 48 6300.

Enter L576 on Enquiry Card

Skill building

DATAFLOW has acquired the Australian distribution rights for the DLM range of educational software. The academic skill builders range is packaged for home and school use, and comprises six maths programs and six-word games. Dataflow is manufacturing the software in Australia, converting the content for use in Australia. Prices start at $A49.95.

Further information: Dataflow Computer Services, 6 Elizabeth Street, Burwood, NSW 2134. Tel: (02) 1745 3303.

Enter L577 on Enquiry Card

Encore! Ferox!

FEROX Microsystems, author of the corporate planning packages Micro DSS/Finance and Micromodeller (United Kingdom), has unveiled its Decision Support Development System for PCs. The desktop financial modelling and corporate planning package, called Encore!, combines features of an interactive spreadsheet with the extended capabilities of a comprehensive English-based financial planning language and decision support system. Encore! is available now the IBM Personal Computer, PC/XT, COMPAQ, and other IBM compatibles. A version is being completed for the Sirius Victor 9000. Suggested retail price in the UK is £395.

Further information: Ferox International Inc, 1701 North Fort Myer Drive, 6th Floor, Arlington, Virginia, USA 22209.

Enter L578 on Enquiry Card

Vic 20 Classics

COMPUTER Classics has released a range of education software for the Commodore Vic 20. The range, covering maths and language was developed by Canberra based, Vic educational. The maths series begins with Young Maths for children aged five to 10, with basic lessons in counting objects and doing simple sums. The series goes on to teach the four functions of addition, subtraction, multiplication and division up to Grade 6. The language series is designed to help children expand their word knowledge. The series begins with L-01 Spellstart for ages six to nine. Spellstart goes on through to L-02, L-03 and L-04 for primary schoolchildren.

Further information: Computer Classics, 3/11 Falcon Street, Crows Nest, NSW 2065. Tel: (02) 438 4866.

Enter L589 on Enquiry Card

Council on B20s

THE versatility of Burroughs B20 microcomputer first attracted the Gold Coast City Council. By delving into the commands that can be made on the equipment, the council has saved much time and labor which would normally be spent typing repetitive material. Time spent on typing standard letters, of which the council uses 18 different types plus envelope formats, was greatly reduced. The B20 has also handled material relating to projects in such areas as town planning, health, building and sub-divisions.

Further information: Burroughs Ltd 30 Alfred Street, Milsons Point, NSW, 2061. Tel: (02) 922 9300.

Enter L580 on Enquiry Card

See HOW A LITTLE KID ALMOST STARTED WW III!
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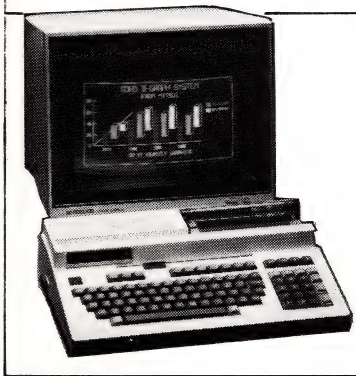

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Brisbane information service

CONTROL Data Australia and Brisbane TV Ltd (BTQ-7) have announced plans to develop jointly an information service utilising the teletext and videotex technologies. The combination of Cybertel, Australia's only national videotex service and BTQ-7's Seventel is expected to provide low-cost delivery of new products and services to business and consumer groups. An example of the type of product which could be delivered is a teletext livestock sale catalogue, transmitted in television time, with a subsequent electronic livestock sale which would use videotex to collect and collate remote bidders' offers. Control Data recently announced it would offer interactive gateways to information provider's host computers to enable public and selected users to access extra databases and confirm shopping, banking and other transactions in realtime.

Further information: Control Data Australia, 493 St Kilda Road, Melbourne, Vic, 3004. Telephone: (03) 268 9610.

Enter L500 on Enquiry Card

Dicker contract

DICKER Data Projects, distributors of the Vector 4 microcomputer, has announced a marketing and supply contract with Modular Information Systems (MISA) of Melbourne. MISA recently launched a business system for small- and medium-size businesses. Major requirements were that the machines have both 8- and 16-bit operating systems and built-in hard disk capacity to provide expansion capability. The Vector 4 is also capable of networking in multiple installations, with Linc facilities.

Further information: Dicker Data, 78 Captain Cook Drive, Caringbah, NSW, 2229. Tel: (02) 525 2122.

Enter L501 on Enquiry Card

Start-up service

TWO Melbourne computer companies have combined to offer a "start up" service to personal computer buyers. Select Microsystems and Fenwick Software began the service three months ago and already have helped more than 25 businesses learn to use their computers. Called Select Start, the education program runs over either one or three days. When selling a personal computer, Select staff judge how much help is needed. A Fenwick consultant then visits the buyer's office, demonstrating the machine and software in actual work applications. The companies believe the program's success is based on the fact that the user is taught in the office, on the work the computer will be used for.

Further information: Select Micro-Systems, 431 St Kilda Road, Melbourne 3004. Tel: (03) 267 1255.

Enter L502 on Enquiry Card

Tridex system

TRIDEX Computer Systems, the only computer company to exhibit at the recent Sydney Boat Show, generated a great deal of interest among the yachting fraternity for Mitsui PCs. The new Sord M5 home computer attracted many inquiries from parents who saw it as the ideal first computer for their children. The Pips software program, designed for the boat wholesaler, is said to allow him to classify stock by a variety of criteria, including engine size, engine number, type and length of boat, keel size, mast size, etc. This method is said to simplify the selection of a boat.

Further information: Mitsui Computer Systems, 1-3 Rodborough Rd, Frenchs Forest, NSW, 2086. Tel: (02) 451 7711.

Enter L503 on Enquiry Card

B20 distributor

BURROUGHS Ltd has appointed Computer Management Services (CMS) as a distributor of its B20 microcomputers. CMS, formed in 1977, uses Micro MicroCobal extensively for its packaged software, which fits the B20. CMS says the totally portable MicroCobal allows movement of a disk containing programs and files, and is genuinely multi-user. CMS employs 70 people and has divisions covering small systems, accountants, facilities management and a bureau. The company's accountants division, with 300 clients, is rewriting the software in MicroCobol for use on a wide range of mini and microcomputers.

Further information: Burroughs Ltd, 30 Alfred Street South, Milsons Point, NSW, 2061. Tel: (02) 922 9300.

Enter L504 on Enquiry Card

AUSTRALIA'S FIRST INTERNATIONAL MICRO-COMPUTER EXHIBITION AND CONFERENCE.
22nd—25th May 1984

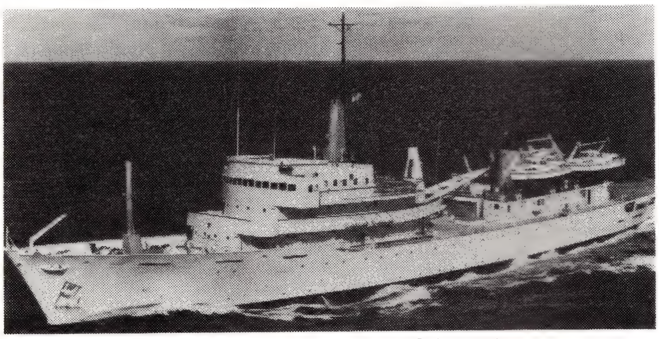
ENDORSED BY:
Government of Western Australia,
Australian Computer Society,
Western Australian Institute of Technology,
Australian Micro-Computer Magazine,
Australasian Computer World.

FOR CONFERENCE DETAILS PLEASE CONTACT
ROBYN SCOTT
TEL. (09) 350 7717

For further details contact: Jenna Ledgerwood, Computer Exhibitions International 190 Hay Street East, Perth, Western Australia 6000. Tel: (09) 325 0111. Telex: 94124

Enter L049 on Enquiry Card

New wave Navy



The RAN survey vessel HMAS Moresby.

THE Royal Australian Navy, which is responsible for assembling and disseminating information to mariners around the world, has installed a powerful microcomputer. The Concise management of stock and commercial accounting package, based on the 32M-byte Alpha Micro AM-1041S microprocessor, is connected to three visual display units and two high-speed printers. The Concise system — known in the Department of Defence as the Hydrostok System — will provide inventory control, ordering and buying of the Navy's entire Naval Chart, stock and survey publications for the Australian fleet, as well as the Merchant Navy and private boating enthusiasts.

Polygram in groove

THE increasing sophistication of portable data entry terminals has attracted diverse organisations as well as traditional pharmacy and supermarket users. Most recent to announce the successful implementation of an innovative PDE system is Polygram Records, based in Sydney and operating Australia-wide. Polygram is the first Australian record company to instal such a system. In conjunction with the TCG Group, Australian distributor of Swedish-manufactured Micronic terminals, Polygram has designed and installed the Polydos (Polygram Dial-up Ordering System) which provides a supplementary facility to its existing order entry and accounting system, Cordis. It has been constructed to interface with any order entry system by providing a standard procedure to collect transmitted orders and receive messages at dial-up terminals. These can be portable or fixed. Polygram has been using 20 PDEs throughout Australia since April, following a pilot study started in November last year. The decision to instal the portable terminal system was based on Polygram's needs to save the representatives' time spent on repetitive tasks involved in order taking and sending, relieving the previous double handling of information.

Housing PERQs

THE Department of Housing and Construction will instal 10 stand-alone workstation machines to improve its Australia-wide computing network. The machines, called PERQ, will be connected to the network to enable them to operate as distributed processing systems and as standalone processors. They have been ordered from ICL Australia and will be installed during the next few weeks in the department's offices in Canberra, Sydney, Melbourne, Brisbane, Adelaide and Perth. The PERQs will be used by 300 to 400 engineers and architects as design aids in civil, electrical, structural and mechanical engineering projects. The PERQs are connected to the department's network by means of Systems Technology 3703 Network Processors.

Good sport DEC

DIGITAL Equipment Corporation (Australia) has proved a good sport with the donation of a DECmate II personal business computer and letter-quality printer to the Australian Sports Medicine Federation. The federation plans to use the computer for recording children in sport policy documents and details of drugs in sport surveys, establishing guidelines for community projects, and processing membership and correspondence as well as general office work.

Life advice

RECOGNISING the opportunities created for financial advisers by advanced technology, Norwich Life has recently developed the Nutech software systems specifically to boost life insurance and superannuation sales. Three programs are available for use on the Epson HX-20 portable computer, supplied in Australia by Warburton Franki, and enable insurance brokers to operate much more efficiently in front of the client. Programs available include financial planning, Nulife for quotations and Nuterm for renewable term quotations. The Epson HX-20 was chosen by Norwich Life because it is designed for the professional adviser on the move. It is extremely portable in its A4 size in a sturdy carry case, can be used for up to 50 hours without recharging the batteries, has a built-in screen, printer and tape cassette.

Further information: Warburton Franki, 199 Parramatta Road, Auburn, NSW 2144.

Enter L509 on Enquiry Card

Attendance figured

MAI's Basic 4 hardware was able to produce instant statistical dissection of attendances at the recent Catering Trade Fair in Melbourne. Installed in only two hours, the computer processed nearly 20,000 registrations during the four-day fair.

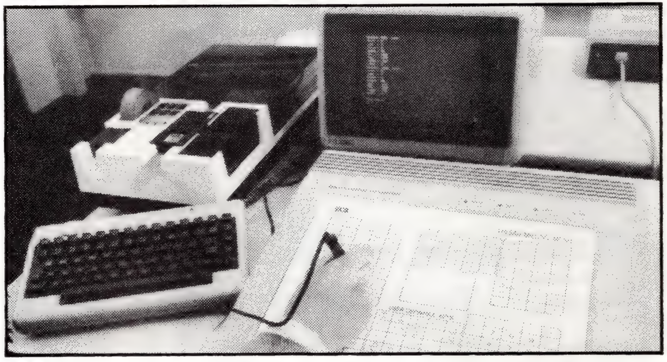
Further information: MAI Australia, 20 Clarke Street, Crows Nest, NSW, 2065. Tel: (02) 438 2455.

Enter L510 on Enquiry Card

Club serves online

AFTER successfully using the services of a computer bureau, Canberra's largest club, the Southern Cross, has opted for inhouse computerisation and is in the final stages of installing a Servit hospitality management system custom-designed for its operation. Major functions of the system are liquor and food stock control through eight-bar registers and three food registers. All sales are recorded by a PLU number which automatically prices an item and stores the sale in the register. As sales accumulate they are read by the computer and stock documented. Communications capabilities between the registers and the computer, an Onyx, generate business operations records allowing the club's operations to be closely monitored at each site.

Aid to metal cutting



PULSAR, a fully upgradable NC/CNC tape preparation system which promises to dramatically improve efficiency and increase metal cutting productivity, has been released by Engineering Computer Sales. A major feature of the system is the elimination of the need for post-processing software for individual NC machines, as each machine definition is now set up inside the Pulsar program. Pulsar also features a menu tablet so NC planners and programmers are now handed the option of setting their desired tool paths with an electronic pen. This means Pulsar may be operated by non-technical personnel as no keyboard or computer skills are necessary. Pulsar is offered on the Hewlett-Packard 9816 Personal Computer with 768K-bytes of memory, or on the HP 9836 Desktop Computer with 896 K-bytes of memory. The desktop system can be enhanced with further memory to become a full CAD/CAM system, and running the ECS CAD200 software.

Further information: Engineering Computer Sales Pty Ltd, 1860 Princes Highway, Clayton, Vic 3168. Tel: (03) 543 2244.

Enter L511 on Enquiry Card

— To obtain further details — literature, prices and other information that may be available for the products described in the editorial columns or from advertisements, enter the number shown at the foot of the item on to the PRODUCT ENQUIRY SERVICE CARD.

Wicat's hotel deal

THE Wicat 150 computer system, with ability to handle up to 20 users and a range of Winchester disk storage up to 80M-byte, has been installed in offices around the world for the Utall group. The contract for Utall's hotel system handles bookings for more than 2000 hotels worldwide, processing more than a half a million transactions a year. The Wicat 150, in addition to MCs, supports the Unix multiuser, multitasking operating systems as well as providing emulation for the popular 8-bit system, CP/M. A wide range of peripheral devices can be connected via a 16-bit parallel interface, and there is optional interface for video disk attachment.

Further information: Wicat Computer of Australia, 88 Christie Street, St. Leonards, NSW, 2065. Tel: (02) 438 2911.

Enter L512 on Enquiry Card

Coal mine updates

QUEENSLAND open-cut coal mining company, Blair Athol, has placed orders with Sokkisha of Sydney for the supply of an electronic surveying data collector, with Tektronix for upgraded computer facilities and with Kingdom for application software for use in planning, development and engineering design. The data collection unit consists of a Zeiss Elta 3 electronic Rotal station Theodolite linked through a Zeiss DAC 100 data converter to a Tektronix 4052A computer. Kingdom's software will enable the development of digital terrain models, the manipulation, interpretation and interpolation of surface models and engineering analysis and design of various works. The present computer installation is a Tektronix 4052 which will be upgraded to the A series by the provision of enhanced language, larger memory and enhanced graphics together with an 8in disk drive.

Further information: Kingdom Pty Ltd, PO Box 338, Ryde, NSW, 2112. Tel: (02) 807 4877; Sokkisha Pty Ltd, PO Box 388, Lane Cove, NSW, 2066. Tel: (020 439 1666; Tektronix, 737 Logan Road, Greenslopes, Qld, 4120. Tel: (07) 394 1155.

Enter L506 on Enquiry Card

Arts bars online

THE HRC Servit management system is being installed at the $200 million Victorian Arts Centre, which comprises the Melbourne Concert Hall, theatre complexes and National Gallery. The system, designed to streamline management procedures, reduce stock shrinkage and increase service efficiency, will consist of 22 bars, four restaurants and one kiosk with cash register POS terminals running off an Onyx 10M-byte multiuser hard disk program. The Servit system, developed and manufactured in Australia by HRC, Brisbane, is designed to operate off a number of mini or microcomputers. Sales will be made by the use of a stock number and pricing of items will be stored in the POS terminals with provision for multiple price levels in all registers. The system will provide automatic extension of stocktake data to report on shrinkage and losses, and to provide accurate profit statements by line, location, supplier and duration.

Further information: HRC Servit, 16-18 Cahill Street, Camperdown, NSW, 2050. Tel: (02) 517 1166.

Enter L507 on Enquiry Card

Wang cures MBF

SINCE automation of its office procedures, Medical Benefits Fund of Australia (Queensland office) claims it has six operators handling more than twice the amount of documents in the same time, using Wang's office information system. Under the old system, the average output of letters a day by six girls was 125. Now it is almost 300 letters a day. The Wang, OIS 140-1 system, which can handle all Medical Benefits Funds special requirements, incorporates eight ergonomic workstations and three high-density matrix printers. Wang provided training on the equipment and Wang Glossary was used to automate many operating tasks.

Further information: Wang Computer, 51 Berry Street, North Sydney, NSW, 2060. Tel: (02) 436 3477.

Enter L507 on Enquiry Card

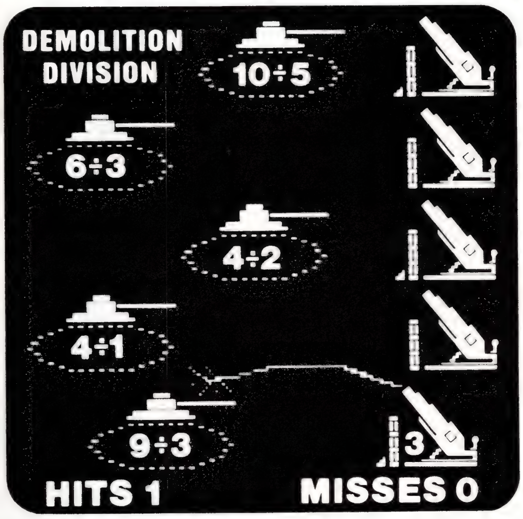
Sanyo space saver

RECOGNISING the need for improvement and more space, Guardian Royal Exchange recently installed Sanyo's Rotascan data storage and retrieval system. Twelve units were installed and the space saved is claimed to amount to 300 square feet. Rotascan was found to be more easily accessible and fitted in with the open plan of the office.

Further information: Sanyo (Rotascan), 127 Walker Street, North Sydney, NSW, 2060. Tel: (02) 929 4644.

Enter L508 on Enquiry Card

THEY CAN'T BLAST THEIR WAY OUT OF THIS ONE WITHOUT LEARNING!



In this game you have to be able to divide correctly to save the army. Kids call it fun. We call it DEMOLITION DIVISION. It's one of 6 exciting and colourful educational software programs developed by DLM that are called Arcademic Skill Builders in Math. Unlike the other games on the market, these require that a child learn something useful while having fun. They also feature variable levels of difficulty, speed, and running time. A child never outgrows DLM software!

DLM programs have been extensively field-tested. DLM is committed to quality. DLM programs have been highly praised time and time again in reviews in countless journals throughout the United States. DLM programs are distributed and supported in Australia by Dataflow Computer Services Pty Ltd, leaders in high-quality educational software.

From all quality Apple dealers, or complete the order form below.

Yes, please send me the software packages checked below!
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Enter L041 on Enquiry Card

Business-like Burroughs

BURROUGHS Ltd has released a range of self-education products on the Australian market. Announcing the release, Burroughs' customer training co-ordinator Petrina Noel said the new products would fill a major gap in the demand for computer education at many levels throughout the community. The self-education products each of which is in a self-contained kit, would appeal to users and non-users of Burroughs computers, and provide fundamental training in computer systems, languages, and application education. The tools in the kits consisted mostly of cassettes, study guide and workbooks all of which except the workbooks were re-usable. Study time would vary from 30 to 50 hours, and the cost from $A550 to $A775.

Further information: Burroughs Customer Education Centre, 64 Parramatta Road, Camperdown, NSW 2050. Tel: (02) 660 6444.

Enter L517 on Enquiry Card

Due recognition

THE opening ceremony of the Tenth Australian Computer Conference made several references to computing education.

The Australian Computer Conference, government and industry recognise computing education is an integral part of the social development of Australia.

The Tasman Turtle Robot started the education theme with a brief demonstration on centre stage. Unfortunately, few realised the turtle is the centrepiece of a carefully thought-out philosophy of education and not just a robot.

Philip Hughes, chairman of Logica Holdings, spoke about government support of computer technology in the UK. He referred to the importance of government assistance of UK micro companies supporting education, particularly the rapid expansion of the Acorn company. It seemed significant that the two machines sharing the stage were the Apple — used to drive the turtle — and the BBC Acorn, arguably the two most important pieces of hardware in Australian computer education. Perhaps there was a message for Applied Technology, a company making an impact with the Microbee.

Even the magnificent video clips at the end of the opening session were full of educational material.

At last the mainstream computing establishment just might be coming to realise computing education is coming of age with its own set of traditions, practices and needs.

One-Step answers

LANIER has launched an addition to its popular EZ-1 Work Processor that teaches the user how to understand and operate the system. The Lanier EZ-1 One-Step, launched at 10ACC, is primarily designed to simplify word processing by making learning and operating, as well as recall and revision of documents from the files, easier and faster. Lanier says that unlike other systems, which force the user to remember long menus or complex commands, the One-Step displays a selection of jobs on its screen. Users simply choose the one they want. After making the selection, instructions are displayed at the top of the screen, prompting the next key stroke. An option line also displays choices for the next instruction or explains how to get into a different job, so the operator is guided step-by-step through each operation.

Further information: Lanier (Australia) Pty Ltd, 296 Burns Bay Road, Lane Cove, NSW 2066. Tel: (02) 428 1233.

Enter L564 on Enquiry Card

Hi-tech marriage

THE inevitable marriage between two of technology's fastest growth areas has taken place with the formation of a new West Australian company Computer Video. Instructional video tapes on the use of hardware and software of a particular computer are played on a home VCR and television set, alongside the computer. The step-by-step instructional tapes are available on VHS and Beta formats. The first release is for the Osborne 1, with production already under way on specific software programs, Wordstar and Supercalc; and basic instructional tapes on a number of other individual computer brands are nearly completed. The tapes will be available through regular computer retail outlets, and from Australian Information Videos for about $70 each.

Further information: Australian Information Videos, 3/36 Ord Street, West Perth, WA 6005. Telephone: (09) 322 5822.

Enter L565 on Enquiry Card

NT points way

THE Northern Territory is not normally thought of in terms of strong infotechnology policies, more in terms of cattle, uranium and lots of space. High technology education, though, is what the Territory's government is pushing with a range of initiatives backed by $450,000, a figure which if you look at the number of schools in the Territory, is very significant.

One Aboriginal school, Alicuring, about 300kms north of Alice Springs, has put up a proposal to the NT government for a 10-station microcomputer network. In his submission, principal Chris Knott says that the computer fits into the learning style of the Aboriginal student and frees the child from peer pressure to conform with the average standard of the group, a standard that is often very low.

We do not know enough yet to say whether or not computers will provide a major breakthrough in Aboringal education, what we do know is that the education of Aboriginal children lags far behind European children of the same age. According to Vic Czernezkyj, senior education officer in computer education in the Territory, all Aboriginal schools will be issued with at least one microcomputer. The government considers computer education so important that it should not be left to ad hoc development in individual schools, he said.

Czernezkyj said schools would only receive equipment subject to staff being involved in appropriate in-service education. To assist this microcomputer centres were being established in Darwin and Alice Springs. The teaching of Basic programming to teachers is not being contemplated he said. Logo would be used as the common computer language, because of its desirable educational features. A quick examination of current computer usage in NT education shows that many high schools already have in excess of 10 microcomputers and one has a network of 17, with a further eight freestanding machines.

Revision needed

EXISTING courses in computing were generally out of date and needed to be revised to reflect the current status of DP and computer science, a Chisholm Institute of Technology lecturer told a seminar. Gerry Gaynard, of Chisholm's school of computing and information, said there also had to be flexible procedures for changing formal courses as required in order to take advantage of new developments.

"Furthermore, we must ensure that the education we provide not only covers specialist technology areas, but also includes new approaches to problem solving and the related industrial and social implications. We as educators cannot afford to ignore the gravity of the situation," he said.

Heed also needed to be taken of latest developments, including the Department of Social Security project. "It will create waves, not just ripples, and will be the forerunner of many more significant happenings as the key technologies converge," Maynard said.

Summer school

THE McGregor Summer School will offer an introductory course in, computing on a small business computing course at this year's summer school. The summer school is held at the Darling Downs CAG in Toowoomba, from next January, 9-20.

Further information: McGregor Summer School, PO Box 100, Toowoomba, Qld. 4350. Telephone: (078) 32 1422.

Enter L566 on Enquiry Card

Army puts desks in firing line

NINE data processing operators at Australian Army headquarters — Logistic Command are now sitting comfortably in their jobs, thanks to the purchase of new space-age desks. Brigadier Loughton said: "While using standard desks, our operators complained of neck and back pains from continually twisting to view documents; they also complained of sore wrists and arms. Their keyboards were much too high." The solution was provided by Melbourne company TAB EDP Systems with their locally made Input-EZ desks.

Further information: TAB EDP Systems Pty Ltd, PO Box 621, Clayton, Vic, 3168. Tel: (03) 579 0011.

Enter L567 on Enquiry Card

Games people play

WHEN Futuretronics introduced Australia's first hand-held games, the screens were flat, colorless and involved simple movements. But they nevertheless became a runaway, overnight success, with thousands being sold in Australia. Now the company has launched the latest in hand-held games. Housed in a neat, compact casing, the new hand-held games feature a luminous liquid crystal display screen. The new screens pop up when pressed, revealing a colorful panoramic screen. Vivid graphics, involving a whole series of actions makes the game exciting and entertaining.

Further information: Futuretronics Aust Pty Ltd, 1076 Centre Road, Oakleigh, Vic, 3176. Tel: (03) 579 2011.

Enter L552 on Enquiry Card

Award selection

THE recently released Ergo-Span adjustable VDU and word processor table has been selected for an Australian Design Award by the Industrial Design Council of Australia. Ergo-Span tables are totally designed and manufactured in Australia by Interior Modular Products Pty Ltd, of Bankstown, NSW. Ergo-Span tables are designed to comply with the standards of adjustability set down for the 1985 German Ergonomic Code.

Further information: Interior Modular Products, 15 Fortril Avenue, Bankstown, NSW, 2200. Tel: (02) 707 1322.

Enter L553 on Enquiry Card

Data I/O guide

WARBURTON Franki has released a 32-page guide book published by Data I/O, explaining programmable logic and its advantages over fixed-function LSI/MSI logic and custom logic. The book details an actual design problem, showing how design equations are generated and translated into fuse tables and how a PAL or IFL device is programmed and functionally tested.

Further information: Warburton Franki, 199 Parramatta Rd, Auburn, NSW, 2144.

Enter L554 on Enquiry Card

Fluke multimeters

JOHN Fluke Manufacturing Co Inc has introduced three new hand-held multimeters, the Fluke 70 Series. These rugged, US-made, 3½digit meters offer both digital and analogue displays. The 32-segment bar graph supplements the digital readout with trend indications. Users can now make peaking and nulling measurements or make a quick continuity check with a digital meter. The new series includes three models, all featuring basic measurement functions (AC and DC voltage and current, as well as resistance) with DC accuracy raning from 0.7 per cent for the Fluke 73 to 0.3 per cent for the Fluke 77.

Further information: F/Measco, PO Box 30, Concord, NSW, 2137. Tel: (02) 736 2888.

Enter L555 on Enquiry Card

Onyx group plan

Users of Onyx 16-bit machines who are interested in setting up a user group in Sydney may contact Hans-Peter Jakobi who is keen to organise such a group. He has been using an Onyx for more than two years and believes the group could be valuable for discussing and solving common problems

Further information: Hans-Peter Jakobi, Overseas Perodicals (Aust) Pty Ltd, 1-3 Seddon St, Bankstown, NSW 2200. Tel: (02) 707 4577.

Enter L556 on Enquiry Card

Software Stars

STAR Craft has a small catalogue of software for the IBM PC. Most of the packages cost less than $50 each.

Further information: Star Craft, PO Box 461, Ashfield, NSW, 2131.

Enter L557 on Enquiry Card

User manuals

WILLIAM Collins has released a range of computer books in Australia, offering a choice of titles and subjects to suit most levels of ability. The Learning To Use series, priced at $A9.95, are beginners' guides which describe in simple language the applications of each microcomputer. There are books on the Vic-20: BBC; Spectrum; Apple; Commodore 64 and T199/4A. There are books on programming, languages and machine code, and a selection of books for children under 10.

Further information: William Collins, 55 Clarence Street, Sydney, NSW, 2000. Tel: (02) 290 2066.

Enter L558 on Enquiry Card

North Star group

A NORTH Star users' association has been formed in Victoria.

Further information: ANSUA, PO Box 194, Wangaratta, Vic, 3677.

Enter L559 on Enquiry Card

Targeting kids

ASHTON Scholastic, who for 13 years has been reaching hundreds of thousands of Australian school children with a learning-through-fun philosophy has released its Wizware range of computer software. Targeted at children eight to 14, Wizware is available on either disk or cassette for the Apple II Plus, Atari 400/800, Vic 20 and TI99/4A computers. Among the first products to be released are four learning games as well as the preview edition of Microzine, Ashton's magazine on a disk. The first issue of Microzine includes such features as Haunted House, a twish-a-plot adventure that allows children to decide a story's outcome; Ask Me, a computer interview program whose first guest celebrity is Robert McNaughton from the film ET the Extra-Terrestrial; Secret Files, a card-filing program; and Poster, a sketch-pad for computer-aided graphics. Further editions of Microzine will be available every eight weeks.

Further information: Ashton Scholastic, Railway Crescent, Lisarow, NSW, 2251. Tel: (043) 28 3555.

Enter L560 on Enquiry Card

Occupational risks

OCCUPATIONAL health has become a major headache for the data processing industry throughout the world today. To provide professional advice on this problem, a specialised consulting service to the computer industry on occupational health has been established in Sydney. The new business, called Data Processing Health Products, is offering full consulting service covering ergonomics, occupational therapy, office design and layout and equipment selection. The primary aim of Data Processing Health Products is to alert companies and data processing staff to the numerous aspects of occupational health and provide solutions to the current and future needs of staff.

Further information: Data Processing, Health Products, 102 Walker Street, North Sydney, NSW, 2060. Tel: (02) 925 0417.

Enter L561 on Enquiry Card

Frequent changes

AUSTRALIA's major designer and manufacturer of ergonomic furniture, Data Decor, has announced the release of the SX1000 workstation. International patents have been applied for the unit's simple floating action mechanism, developed by Data Decor's Richmond, Melbourne, head office. The unit is particularly ideal in environments where there are frequent changes of operators.

Further information: Data Decor, Waterloo Place, Richmond, Vic, 3121. Tel: (03) 429 9488.

Enter L562 on Enquiry Card

ACADS index

ACADS (Association for Computer Aided Design) has released the fourth edition of the ACADS Software Index. The new publication, covering about 2000 software programs in use by Australian industry, includes a large number of additions since the previous edition was published three years ago. The emphasis is the ACADS Software Index is on technical applications, including many programs for the manufacturing, engineering, architectural, building and construction industries together with related support services.

Further information: ACADS, 576 St Kilda Road, Melbourne, Vic, 3004. Tel: (03) 51 9153.

Enter L563 on Enquiry Card

ACCESSORIES AND DISKETTES

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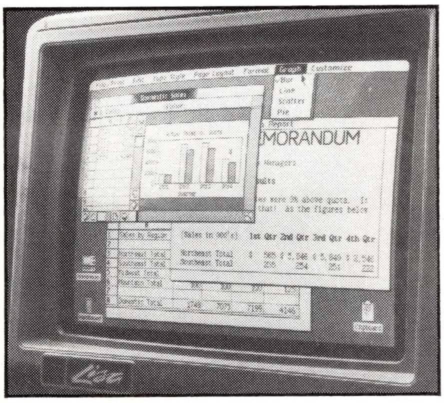
Next Issue

Learning to live with Lisa

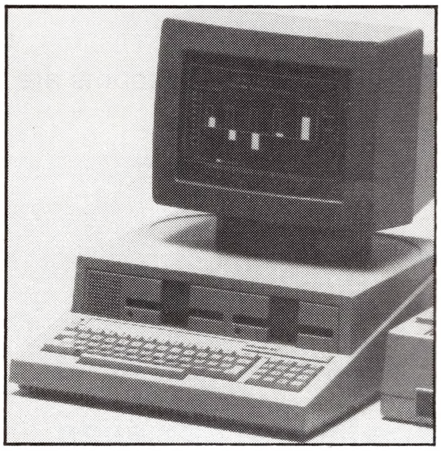


Associate Editor Tony Smith has been living with Apple's Lisa for a few weeks . . . and the relationship looks like developing into something serious. As with any relationship, however, there's a high level of frustration as Tony finds that a great concept doesn't mean that everything is possible. Being the first kid on the block produces some problems. Don't miss this review.

Japanese microcomputers in Australia

We survey the success and failure of Japanese micro manufacturers in Australia and ask them about their attitudes to the local market. Editor Ian Webster has just returned from a visit to Japan where he took in the Japanese Electronics Show. He'll report on this and indicate what Australian buyers are likely to be using next year. Also Australian Micro joins in the search for a fifth generation computer, and finds that this ambitious project is Japan's answer to the man on the moon. It's not so much the importance of getting there but the infrastructure that will be built around it.

ALSO



We review Olivetti's repackaged M20 which represents a major challenge for the Italian manufacturer in the highly competitive Australian marketplace.

AND

Osborne's ill-fated Executive.

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